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## **Third Site DNAPL Containment Area Supplemental Sampling Report**

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## 1. INTRODUCTION

On behalf of the Trustees of the Third Site Trust Fund, Geosyntec Consultants (Geosyntec) and Ramboll have prepared this Supplemental Sampling Report for the Dense Non-Aqueous Phase Liquid (DNAPL) Containment Area for the Third Site (or Site) located at 985 S. US Highway 421 in Zionsville, Indiana.

In 2016, the United States Environmental Protection Agency (USEPA) approved the use of Electric Resistive Heating (ERH) to remediate the DNAPL area as per the December 12, 2016 Amended EAM (USEPA, 2016B) and December 12, 2016 Amended Administrative Order by Consent (USEPA, 2016A). McMillan McGee (MM) subsequently designed and operated an ERH remedy within the DNAPL Containment Area at the Site. MM operated the ERH system from September 24, 2018 to January 24, 2019, at which point MM shut down the heating phase of the ERH remedy based on their evaluation of the operational data. In March 2019, Ramboll conducted the ERH compliance monitoring groundwater sampling, which showed that groundwater samples from ERH compliance monitoring wells P-1 and P-2 did not meet the ERH compliance criteria of 4,285 µg/L total volatile organic compounds (TVOC; McMillan McGee, 2018) in these wells (**Table 1**). The ERH system was restarted by MM in the area of P-1 and P-2 only and operated from April 22, 2019 to August 6, 2019, when it was again shut down. Ramboll conducted compliance monitoring again in September 2019 and P-1 and P-2 again failed to meet the ERH compliance standards (Table 1). The ERH system was then restarted for only a brief period of time in the Fall of 2019 in the vicinity of P-1 only. The work described in this report was conducted to evaluate the cause of the failure to meet compliance standards.

This Supplemental Sampling Report presents the results of the Phase 1 and Phase 2 sampling activities, which were proposed in the Phase 1 Supplemental Sampling Work Plan (submitted to the United States Environmental Protection Agency [USEPA] on May 15, 2020) and the Phase 2 Supplemental Sampling Work Plan - Revised, (submitted to the USEPA on June 10, 2020). This sampling effort is not intended to be used for ERH compliance monitoring; the only ERH compliance monitoring conducted was the sampling completed in March and September 2019 in accordance with the ERH Design Report (McMillan-McGee, 2018).

## **1.1 Purpose**

The purpose of the Phase I and Phase II sampling conducted by Geosyntec and Ramboll in 2020, was to determine the cause of the failure of the ERH system to achieve required compliance standards.

The strategy to evaluate residual contaminant mass in the DNAPL Containment Area (the Cell), following treatment with ERH, was based on a multiple lines of evidence approach, including:

### ***Phase 1 (Completed the week of April 27, 2020)***

- *Groundwater sampling from existing wells in the Cell.* This sampling provided screening level data delineating the distribution of dissolved phase mass at 14 sampling locations in the Cell, including ERH extraction wells and groundwater monitoring wells. The selected wells were located throughout the area of the Cell that had not met the ERH remedy compliance criteria. These wells include extraction and compliance installations that are screened between 4 and 40 feet (ft) below ground surface. These data informed the basis for the proposed sampling program to be completed in Phase 2.

### ***Phase 2 (Completed the week of August 10, 2020)***

- *Soil sampling at 17 locations in the Cell.* This sampling provided detailed vertical profiling from targeted locations in the cell. The sampling locations included sites of former soil samples and new locations that were determined based on the results of the Phase 1 groundwater sampling. The soil cores provide quantitative data of soil and porewater concentrations to assess whether residual contaminant mass is present in the cell. The depth range of the soil sampling was from 4 to 46 ft below ground surface.
- *Groundwater sampling from the lower section of the soil core boreholes.* This sampling provided groundwater samples from the zone below the depth of the ERH compliance and extraction wells. These samples provide dissolved phase data for the depth interval from approximately 41 to 46 ft below surface as noted below.

## **1.2 Objectives**

The specific objectives of the supplemental sampling work were to:

- Develop a current understanding of contaminant distribution within the DNAPL containment area following ERH, specifically:
  - The current spatial distribution of contaminants in the DNAPL containment area; and
  - Potential mass in the upper portion of the Lower Till underlying the DNAPL containment area.
- Identify the source of the groundwater contamination detected in wells P-1 and P-2 following ERH (**Table 1**); specifically, to confirm whether there is residual untreated mass within the ERH target treatment area or whether mass is entering the ERH treatment volume from the underlying Lower Till.

Results from these investigations are being used to inform recommendations and next steps (Section 4).

## **2. PHASE 1 – GROUNDWATER SAMPLING FROM EXISTING WELLS**

The Phase 1 groundwater sampling activities provided screening level groundwater data from existing wells and required only limited alteration to the ERH infrastructure at the site to access the existing ERH extraction and monitoring wells. These data provide an understanding of the current spatial distribution of dissolved phase volatile organic compounds (VOCs) in the Cell, which informed the design and optimization of the soil and groundwater sampling presented in Section 3.

### **2.1 Phase 1 Methods**

The depth to water was measured in compliance monitoring well P-1 on April 26, 2020 to confirm current groundwater elevation in the DNAPL Containment Area and aid in finalizing the depths to collect groundwater samples from the 14 wells sampled as part of Phase 1.

Samples were collected from the following wells: P-1, P-2, X-B3, X-B4, X-C1, X-C3, X-C4, X-D1, X-D2, X-D3, X-D4, X-E1, X-E2, and X-E3 (**Figure 1**). Following gauging depth to water in the 14 wells, two HydraSleeve™ samplers were deployed in series in each of the wells; one sampler was placed so the top of the sampler was approximately 3 ft from the bottom of the well and the second sampler was deployed such that the top of the sampler was approximately 3 ft below groundwater elevation.

In general, samples were collected from 25 feet below ground surface (ft bgs) and 37 ft bgs in each of the wells. HydraSleeve™ samplers were deployed and the water column allowed to recover for approximately 24 hours, after which groundwater samples were collected in accordance with the HydraSleeve™ Standard Operating Procedures (Geosyntec, February 2020). In addition, following the collection of the grab groundwater samples, groundwater samples were also collected using Ramboll's Site standard low-flow sampling methods from wells P-1, P-2, X-C1, X-D1, X-E1, and X-E2 to obtain data from a blended screen interval and for comparison to previous results from March and September 2019 (P-1 and P-2, **Table 1**).

Groundwater samples were analysed for VOCs by EPA method 8260B. Sample handling and laboratory analysis was undertaken according to the procedures and limits presented in the Site Quality Assurance Project Plan (ENVIRON, 2013).

## **2.2 Phase 1 Results**

**Table 1** provides the results of groundwater samples collected as part of the compliance monitoring of the ERH system from P1 and P2 using low flow sampling procedures in March and September 2019 for comparison. **Table 2** provides the results of the low flow samples collected from P-1, P-2, X-C1, X-D1, X-E1, and X-E2 in April 2020. **Table 3** provides the results of the samples collected using HydraSleeve™ samplers from P-1, P-2, X-B3, X-B4, X-C1, X-C3, X-C4, X-D1, X-D2, X-D3, X-D4, X-E1, X-E2, and X-E3. These samples allow assessment of the variability in contaminant concentration across the well screen and are indicative of groundwater concentrations in the zone between approximately 4 to 40 ft bgs.

**Figure 2** presents the groundwater concentration data in plan view across the Containment Area and indicates the variability with depth (~25 and 37 ft bgs).

### **2.2.1 Interpretation**

These data provided a spatially distributed assessment of where elevated dissolved phase concentrations are present. Although these samples did not provide a direct assessment of the groundwater concentrations below 40 ft depth, they do indicate that there is an area of concentrations present above 4,285 micrograms per liter (ug/L) TVOCs across the central portion of the cell. The broader and consistent detection of TVOC concentrations within the target treatment zone (i.e., 4 to 40 ft bgs) in multiple wells in a portion of the cell shows the presence of residual mass remaining at depths above 40 ft bgs post ERH. Further delineation of the contamination in these shallower intervals was the focus for the soil investigation in Phase 2. Phase 1 met its objectives

of identifying the specific area of the Cell that required further delineation and informed recommendations for Phase 2 (Section 4).

Another notable observation when comparing the concentrations of samples collected during the second post-ERH confirmatory sampling event (September 2019; see **Table 1**) and the Phase 1 low-flow sampling data conducted at the same depths in April 2020 (**Table 2**) is that concentrations of several VOCs and the TVOCs appear to be attenuating over time. Some of the attenuation of the parent products (e.g., trichloroethene [TCE] and tetrachloroethene [PCE]) may be related to the brief operation of the ERH system in the Fall of 2019; however, the increasing concentrations of daughter products such as cis-1,2-dichloroethene (cDCE) and trans-1,2-dichloroethene (tDCE) observed in P-1 is an indication of biological attenuation of TCE and PCE occurring post-ERH shutdown. Both cDCE and tDCE were not detected in March 2019 in P-1 at the end of the initial ERH treatment phase. By April 2020, the concentration of cDCE and tDCE detected in P-1 had increased to 2,750 µg/L and 63.4 µg/L respectively. These daughter products would not be formed during ERH. Enhanced natural attenuation post-ERH is not unusual due to the residual elevated temperatures, which bacteria thrive in. The beneficial effect of natural attenuation can be seen in P-2, which failed ERH compliance criteria in September 2019 (**Table 1**) but six months later in April 2020, TVOC concentrations had reduced an order of magnitude (**Table 2**). Similarly, concentrations at P-1 reduced by a factor of 3 to 4 between September 2019 and April 2020.

### **3. PHASE 2 SOIL AND GROUNDWATER SAMPLING**

The Phase 2 investigation activities included adaptive field investigation activities using a mini sonic drill rig to collect soil cores from between 4 and 46 ft bgs and groundwater samples between 41 and 46 ft bgs for laboratory analysis of VOCs. Sample handling and laboratory analysis were carried out in accordance with the procedures and limits presented in the Third Site Quality Assurance Project Plan (ENVIRON 2013).

On July 15, 2020 Ramboll mobilized to the site to conduct a utility survey within the DNAPL Containment Area and oversee ERH equipment relocation. The existing ERH equipment (e.g., well head assemblies, extraction lines and cables) were temporarily disassembled and moved by the ERH contractor (McMillan-McGee Corp.) to a mutually agreed upon laydown area within the Third Site perimeter fence prior to commencing sampling activities. This equipment was moved to provide sufficient access for the drill rig to the proposed sampling locations so that the scope of work

presented below could be safely completed. Drilling commenced on July 20 following the temporary relocation of the ERH equipment, which was completed on Saturday July 18. In addition, compliance monitoring wells P-1 and P-2 had the tops of their casing cut down closer to ground surface to allow the drill rig to maneuver in the tight confines of the DNAPL Cell. These wells were re-sealed with their expandable plugs following the cutting and will need to be resurveyed.

### **3.1 Phase 2 Methods**

#### **3.1.1 Discrete Soil Sampling**

In accordance with the May 14, 2020 *Third Site DNAPL Containment Area Supplemental Sampling Plan – Phase 2* (Phase 2 Work Plan) and subsequent correspondence with USEPA, soil cores were collected to provide a depth-discrete profile of contaminant concentrations through the target treatment zone. Continuous core soil samples were collected to a depth of 46 ft bgs using sonic drilling technology from seventeen borings from July 20 through August 14, 2020. The proposed soil and groundwater sample (PSGS) locations presented in the Phase 2 Work Plan are shown on **Figure 3**. Four of the seventeen PSGS locations (PSGS-1, PSGS-2, PSGS-7, and PSGS-10) were chosen to correlate with the soil core locations sampled in 2014 as part of the Supplemental Data Collection investigation (ENVIRON 2014). Ten of the remaining thirteen PSGS locations were selected based on the results of the Phase 1 groundwater sampling to provide additional coverage within the area of TVOC concentrations greater than the target 4,285 µg/L TVOC concentrations (shown on **Figures 2 and 3** as the isoconcentration lines).

The original work plan identified a single “floater” location to be determined during the field program to address any data gaps that were identified during the program. In the end, three additional boreholes, PSGS-15, PSGS-16, and PSGS-17, were determined to be required based on the field observations (e.g. PID readings) and analytical results from PSGS-11 and other nearby completed boreholes. **Figure 4** illustrates the locations of these additional boreholes.

After collection of the continuous core samples down to 46 ft bgs, soil cores were placed in a shaded area and immediately field-screened with a photoionization detector (PID) for the presence of VOCs. As approved by USEPA, beginning July 22, the bags used to collect the soil from the drill tooling remained closed during the field screening to minimize potential volatilization. Small holes were punched into the soil cutting bags at one-foot intervals to take PID measurements. The bags remained closed until soil

samples were collected for laboratory analysis immediately upon completion of the PID screening

One soil sample was collected from each 5-ft interval from the portion of the soil core exhibiting the greatest PID response and that sample was retained for laboratory analysis. Soil samples were collected using Terra Core® samplers and stored on ice until transport to Pace Analytical under chain of custody procedures. Soil samples were submitted for analysis of VOCs by EPA Method 8260C.

The Phase 2 Work Plan called for immediately abandoning the borehole if soil cores from any boring and from any depth exhibited elevated PID readings (> 500 ppm) or if there were any visual observation of DNAPL in the soil. PID readings and soil descriptions for every PSGS location are shown on boring logs included in **Appendix A**. PID readings exceeding 500 ppm and slight sheens, where observed, were generally confined to the last core of the borehole from the 40-46 ft bgs interval, making abandonment unnecessary.

The soil borings were installed using the methods detailed in the Phase 2 Work Plan, by advancing an outer casing that remained downhole while the core was retrieved from the casing, thus isolating the shallower depth intervals. Cellular concrete comprised the uppermost 1 ft interval. It was cored out using the drill rig at each boring location, and the 1-2 ft bgs intervals were hand-cleared to protect the horizontal ERH system piping. To mitigate poor recovery of loose, dry sands in the 2-10 bgs soil interval, the outer casing was retrieved from the borehole after reaching 10 ft to remove the soil core, then the outer casing method was resumed from 10 ft bgs in 5 ft increments.

The Phase 2 Work Plan contemplated that once the final core is collected from a depth of 46 ft bgs, the outer casing of the drill rig would be retracted to approximately 40 ft bgs to expose the lower 6 ft of the borehole. Then an attempt would be made to collect a groundwater sample from 40-46 ft bgs using either a temporary well screen lowered through the casing or a groundwater grab sampler such as a Geoprobe SP22 sampler. This procedure was modified in the field due to drilling limitations. Once the 35-40 ft bgs core was collected and the outer casing was advanced to 40', any water that had accumulated in the borehole was pumped out, and the inner core barrel was advanced to 46' without advancing the outer casing. The 40-46 ft bgs soil core was then removed and, depending on location, either a grab groundwater sampling point or a temporary monitoring well was installed. All appropriate tooling was decontaminated by pressure-washing with Alkonox solution between each PSGS location. All PSGS locations were surveyed by a licensed surveyor.

### **3.1.2 Grab Groundwater Sampling Points**

Grab groundwater sampling points (PSGS-1, PSGS-3, PSGS-5, PSGS-6, PSGS-8, PSGS-9, PSGS-11, PSGS-13 through -15, and PSGS-17) were completed with a 5 ft PVC screen installed within the cased drilling tooling from 41 ft bgs to 46 ft bgs. A water level tape was used to determine whether groundwater is entering the borehole. A period of up to three hours was allowed for sufficient water to accumulate in the borehole to collect a sample. Insufficient amounts of water accumulated at locations PSGS-1, PSGS-6, PSGS-13, and PSGS-17 at the end of the three-hour waiting period, and no groundwater samples were able to be collected. These boreholes were abandoned by backfilling with hydrated bentonite or grout. Enough water had entered the boreholes at locations PSGS-3, PSGS-5, PSGS-8, PSGS-9, PSGS-11, PSGS-14, and PSGS-15 to facilitate collection of a groundwater sample. A disposable bailer was used to collect a sample at these locations for analysis of VOCs by EPA Method 8260C. Sample handling and laboratory analysis were undertaken according to the procedures and limits presented in the Site Quality Assurance Project Plan (ENVIRON 2013). PSGS-3, PSGS-5, PSGS-8, PSGS-9, PSGS-11, PSGS-14, and PSGS-15 boreholes were abandoned after collection of groundwater grab samples by backfilling each borehole with grout and hydrated bentonite. Temporary wells were installed at the remaining locations as discussed below. Laboratory reports are presented in Appendix C.

### **3.1.3 Temporary Wells**

Temporary wells were installed at PSGS-2, PSGS-4, PSGS-7, PSGS-10, PSGS-12, and PSGS-16. These temporary well locations were primarily based on proximity to compliance monitoring points P-1 and P-2 or data collection points from the 2014 investigation (ENVIRON, 2014). Temporary wells were completed with a 5-ft PVC screen installed from 41 ft bgs to 46 ft bgs. A sand pack was placed surrounding the screen to 1 foot above the screened interval, with a bentonite chip seal to 1 foot above the sand pack to prevent grout seepage, and the remainder of the borehole was filled with grout as the outer sonic rig casing was retracted. On August 4 and August 14, 2020, the temporary wells were sampled using low-flow procedures for analysis of VOCs by EPA Method 8260C.

## **3.2 Phase 2 Results**

**Table 4** provides the results of the soil samples collected from locations PSGS-1 through PSGS-17 (**Figure 3**). These samples allow assessment of the variability in contaminant concentration laterally across the cell and vertically with depth in the Upper

Till, Sand and Gravel, and upper portion of the Lower Till units and are indicative of contaminant concentrations between 4 and 46 ft bgs.

**Table 5** provides the results of the groundwater grab samples collected from 41- 46 ft bgs from the soil borings PSGS-2, PSGS-3, PSGS-4, PSGS-5, PSGS-7, PSGS-8, PSGS-9, PSGS-10, PSGS-11, PSGS-12, PSGS-14, PSGS-15 and PSGS-15. Total VOC data for these wells is also displayed on **Figure 4**. Collection of groundwater samples were attempted from PSGS-1, PSGS-13, and PSGS-17 but these borings remained dry. These samples allow assessment of the variability in contaminant concentration across the cell at a depth of 41 to 46 ft bgs, which is indicative of groundwater concentrations immediately beneath the ERH target treatment zone.

As seen in **Table 5**, acetone is elevated in some of the groundwater samples collected from beneath the target treatment zone. Acetone was not present at elevated concentrations in the baseline samples collected in 2019. Therefore, acetone is not included in the sum of VOCs in the Total VOC numbers shown on **Figure 4** since this compound is typically a temporary intermediate degradation product generated due to the breakdown of soil organic matter during the thermal treatment. The relatively high concentrations of acetone are expected to be quickly attenuated (*Fowler et al, 2011*).

**Appendix B** includes graphs of the soil and groundwater data from each Phase 2 sample location. The data are shown on the graphs as a composite of individual compounds with depth from 4 to 46 ft bgs for soils and from 41 to 46 ft bgs for groundwater to provide a visual display of the vertical distribution and breakdown of contaminants within the DNAPL Cell. TVOC concentrations are also noted on the plots beside the bars to illustrate the distribution of TVOC with depth. Note that the soil and groundwater data are presented at one of two different scales, with the larger scale (used for portraying deep groundwater concentrations at locations PSGS-8, PSGS-10, PSGS-11, PSGS-15, and PSGS-16 and for the soils data at PSGS-11 where DNAPL was encountered) being 10X larger than the smaller scale (used for the remainder of the locations). The scale is noted in the title for reference. These scales were selected to provide a consistent visual comparison across locations and also to show details in the distribution of the various contaminants to the degree possible.

**Figure 5 and Figure 6** provide cross sections through the DNAPL Cell that generally follow the locations of select cross sections developed during the 2014 DNAPL containment area investigation (Environ, 2014). These cross sections display soil and groundwater data from select PSGS locations and groundwater data from a subset of the existing wells sampled during Phase 1.

### 3.2.1 Interpretation

These data have provided a spatially distributed assessment of the soil and groundwater contaminant detections present at elevated concentrations that may have contributed to the failure to meet the ERH compliance criteria in the groundwater from 4 to 40 ft bgs at P-1 and P-2. The data indicate that the reason for failure of ERH to achieve 90% reduction in total VOCs in groundwater at P-1, and historically at P-2, is the residual elevated concentrations of contaminants within the treatment zone between depths of 4 to 40 ft bgs. Evidence to this effect is seen in the presence of elevated soil concentrations at multiple depths above 40 ft at 65% of the sampling locations (11 of 17), including at PSGS-3 and PSGS-4, which are located in close proximity to P-1 (see **Appendix B**). As seen in **Appendix B**, at almost all of these locations there were elevated concentrations of VOCs in soil at 15 to 25 ft bgs, in addition to elevated VOC concentrations just above the Lower Till at approximately 32 ft bgs.

A review of the soil and groundwater data, which is graphically represented in **Appendix B**, supports a possible correlation between maximum TVOC soil concentrations within the upper 40 ft generally exceeding 75 mg/kg and ranging upwards towards 180 mg/kg corresponding to the areas of elevated TVOC groundwater concentrations ( $>4,000 \mu\text{g/L}$ ) in the upper 40 ft of the DNAPL Cell. On the other hand, soil coring locations on the fringes of the area of elevated TVOC concentrations ( $>4,000 \mu\text{g/L}$ ) in groundwater in the upper 40 ft of the DNAPL Cell appeared to generally correlate to locations where the maximum soil detection was below 50 mg/kg. As examples:

- PSGS-3 and PSGS-4, which had maximum soil concentrations ranging between 81.5 and 119.1 mg/kg, compared to the maximum groundwater concentrations detected at P-1 of 12,306  $\mu\text{g/L}$  during the low flow sampling in April 2020.
- PSGS-1 and PSGS, which had maximum soil concentrations ranging between 4.72 and 27.6 mg/kg, compared to the maximum groundwater concentrations detected at nearby wells X-D1 and X-C1, which ranged between 359 and 476  $\mu\text{g/L}$  during the hydrosleeve sampling program in April 2020.

Furthermore, soil concentrations of VOCs below the target treatment zone (i.e., 41 to 46 ft bgs) at PSGS-3 and PSGS-4 were very low, indicating that a source of VOCs does not exist in the Lower Till in the area of P-1. The latter data are also consistent with the groundwater data, which indicate that VOC concentrations in deep groundwater at PSGS-3 and PSGS-4 are orders of magnitude below the concentrations detected in P-1

(see **Figure 6**). All these data indicate that contamination present below the target treatment zone is not migrating upwards into the treatment cell and re-contaminating the groundwater in the vicinity of P-1.

At 35% of the sampling locations (i.e., PSGS-8, PSGS-10, PSGS-11, PSGS-15 and PSGS-16; all located within the central/southeastern portion of the DNAPL cell), soil and groundwater samples collected from 41 to 46 ft bgs were found to contain elevated TVOC concentrations compared to the other deep samples. One location (PSGS-11) exhibited a strong solvent odor and slight sheen on the core, indicating the localized presence of DNAPL at 44 ft bgs. The detection at PSGS-11 appeared to correlate with a thin sand stringer observed at a depth of 44 ft bgs. Sand stringers in the Lower Till were observed at a few locations but do not appear to be contiguous within the DNAPL Cell. The elevated groundwater concentrations from 41-46 ft bgs at PSGS-8, PSGS-10, PSGS-15 and PSGS-16 and the DNAPL that was found at the bottom PSGS-11 (44 ft bgs) do appear to be localized to the area around these soil core locations and did not extend northwesterly as far as P-1 or southeasterly as far as P-2. The presence of the impacted groundwater at depth within the Lower Till unit therefore did not cause the failure to achieve the cleanup criteria at P-1 and P-2.

### **3.3 P-1 Sump**

McMillan McGee (MM) raised a concern with the USEPA during the Phase 2 soil coring that the elevated concentrations in P-1 may be an artifact of an accumulation of sediment/DNAPL in the sump at the bottom of the well. The thermal extraction wells and compliance monitoring wells sampled as part of Phase 1 are constructed with a long screen from 4 to 40 ft bgs and contain an underlying sump at the base of the well from 40 to 41 ft bgs. MM requested that the sump in P-1 be cleaned out, any sediment removed from the sump be sampled, and the well also be resampled.

After discussion with USEPA, it was decided that sampling should progress as per the approved Supplemental Sampling Work Plan and if the results of the soil and groundwater profiling were inconsistent with the groundwater samples collected from P-1 (i.e., do not provide evidence towards a residual source remaining in the ERH target treatment zone), then we would revisit this possible issue with the sums and develop follow on sampling recommendations.

As discussed above and seen on **Figure 6** and the depth-discrete soil profiles for PSGS-3 and PSGS-4 in **Appendix B**, there is evidence that soil and groundwater contamination remains in the aquifer in proximity to P-1 within the target treatment zone, including

depths corresponding to the Sand and Gravel and Upper Till layers. The residual concentrations observed in soils at these depths is consistent with the elevated groundwater concentrations observed at the 24.6 ft depth interval in Phase 1 (13,149 µg/L TVOCs).

The presence of contamination (if any) that may have collected in the sump is most likely a reflection of contamination that would have migrated downwards from some unknown elevation within the ERH target treatment zone and, as such, is not informative as to the vertical location of residual contamination. Any contamination that may be confined within the sums of these wells would not have influenced the concentrations detected in the shallower interval of P-1 (~25 ft depth sample) or in surrounding thermal extraction wells where concentrations at both shallow and deep depths exceeded the ERH compliance standard (e.g., X-D2, X-D3, X-D4, and X-C3).

Finally, a depth-to-bottom measurement in the sump indicated the accumulation of 0.5 ft of sediment. The presence of NAPL was not visually detected on the measuring tape.

Cleaning out the sump in P-1 and sampling the sediment that is removed may help to determine if the accumulated sediment is contributing to the concentrations in the deeper Phase 1 groundwater sample collected in P-1. If there is sediment in the sump and it does not have elevated concentrations that reflect the breakdown of compounds observed in the sample of P-1, then it would be evident that the concentrations in the lower portion of P-1 reflect a localized area of elevated concentrations in the soil around P-1 from within the treatment zone. If the concentrations in the sediment do indicate concentrations elevated enough to account for the groundwater concentrations from the deep Phase 1 sample, then we recommend that the sump be fully cleaned out and the well allowed to re-equilibrate to determine if the sediment is the only source of the elevated concentrations or if groundwater concentrations remain high at this depth, indicating that there is also a localized area of elevated concentrations in the groundwater around P-1 from within the treatment zone.

#### **4. SUMMARY AND NEXT STEPS**

In summary, the reason for the failure of the ERH remedy to achieve the targeted 90% reduction in total VOCs in groundwater at P-1 and historically at P-2 is the remaining elevated concentrations of residual contaminants within the target treatment zone. This contamination appears to be naturally attenuating over time. Any contaminated material that may have accumulated over time in the sump at P-1 did not cause the failure to meet the ERH compliance criteria in P-1. Contamination migrating upwards from below the target treatment zone into shallower depths under an upward hydraulic gradient also was not the cause for the failure in P-1 to meet the ERH compliance criteria, as very little mass is present below the target treatment zone in this area.

The evidence of DNAPL that was found in a sand stringer in PSGS-11 below the target treatment zone (at 44 ft bgs) did not cause the failure for ERH to achieve the compliance criteria at P-1 and P-2 and is a new observation. The groundwater contamination observed at depth centered around the DNAPL observed at PSGS-11 is confined to a small area located in the central southeastern area of the DNAPL cell, away from the exceedances observed at P-1 and P-2.

Two uncertainties remain, including:

- The degree to which sediment that has accumulated within the sump at P-1 may have contributed to the elevated concentrations detected at the deepest depth in P-1. It is clear that this was not the cause of the failure of ERH to meet its compliance criteria in P-1. If further remedial activities need to be undertaken to reduce the concentrations in this area, however, then cleaning out the sump in P-1 and resampling P-1 after equilibration may be beneficial to understand the extent to which residual DNAPL may persist in the target treatment zone, as this may influence the decision on the approach taken and would inform potential future costs.
- The potential for the contamination discovered in the Lower Till unit to migrate outside of the sheet piled area is currently unknown. We recommend that a synoptic water level survey in the remaining temporary Phase 2 wells and existing wells be undertaken once static water levels have been reached to confirm vertical gradients, if any are measurable, between the Sand and Gravel and Lower Till units and lateral gradients and potential flow direction, if any are measurable, within the Lower Till.



Finally, given the evidence of ongoing natural attenuation, we recommend that an additional sampling event of all wells containing elevated residual TVOC concentrations within the DNAPL cell be resampled in six to twelve months to assess whether the concentrations pose a risk of downgradient lateral movement outside of the sheet pile enclosed cell, based on those data and the results of the synoptic water level monitoring described above.

## REFERENCES

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## TABLES

TR0485D

September 2020

**TABLE 1**  
**Compliance Sampling - 2019 Confirmation Groundwater Analytical Results**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

LOCATION COLLECTION DATE	P-1		P-2		P-3		SUMP	
	3/29/2019	9/5/2019	3/29/2019	9/5/2019	3/29/2019	9/5/2019	3/29/2019	9/5/2019
1,1-Dichloroethane	208	355	<10	<5	<10	<5	<10	<5
1,1-Dichloroethene	<1	995	<10	<5	<10	<5	<10	<5
cis-1,2-Dichloroethene	<1	2,630	2,150	766	131	70.8	634	262
trans-1,2-Dichloroethene	<1	59.3	44.2	10.2	<10	<5	35.8	10.9
Tetrachloroethene	2,240	1,480	84.6	103	<10	<5	113	5.3
1,1,1-Trichloroethane	<1	<5	<10	<5	<10	<5	<10	<5
1,1,2-Trichloroethane	<1	<5	<10	<5	<10	<5	<10	<5
Trichloroethene	21,000	15,200	446	258	39.0	<5	653	250
Vinyl Chloride	64.5	28.0	14.3	6.1	<10	2.3	<10	<5
Acetone	106	<100	<200	<100	220	<100	222	<100
Chlorobenzene	3.4	<5	<10	<5	<10	<5	<10	<5
Chloroethane	<2	11.0	<10	<5	<20	<5	<10	<5
Chloroform	<1	<5	<10	<5	<10	<5	<10	<5
Chloromethane	<2	<5	<10	<5	<20	<5	<10	12.1
2-Chlorotoluene	20.3	8.0	<10	<5	<10	<5	<10	<5
1,2-Dichlorobenzene	16,600	8,710	2,380	3,170	92.7	8.4	1,060	420
1,3-Dichlorobenzene	2.9	<5	15.3	<5	<10	<5	<10	<5
1,4-Dichlorobenzene	140	45.6	15	19.2	<10	<5	<10	<5
Ethylbenzene	1,620	860	127	134	<10	<5	102	23.4
Isopropylbenzene (Cumene)	100	37.5	<10	9.8	<10	<5	<10	<5
Naphthalene	10.4	2.8	<10	<5	<10	<5	<10	<5
n-Propylbenzene	17.2	7.8	<10	<5	<10	<5	<10	<5
Toluene	228	87.0	10.3	9.0	<10	<5	<10	<5
1,2,4-Trichlorobenzene	4.3	<5	<10	<5	<10	<5	<10	<5
1,2,4-Trimethylbenzene	17.5	7.5	<10	<5	<50	<5	<50	<5
1,3,5-Trimethylbenzene	6.4	<5	<10	<5	<50	<5	<50	<5
Xylene (Total)	5,290	2,540	292	360	<30	<10	291	105
Total VOCs	<b>47,679</b>	<b>33,065</b>	<b>5,579</b>	<b>4,845</b>	483	82	3,111	1,089
Performance Standards for ERH Treatment (Total VOCs) <sup>(1)</sup>	4,285							

NOTES:

1. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
2. Samples analyzed using EPA Method 8260.
3. All results in microgram per liter (ug/L)
4. Bold indicates exceeds Performance Standards for ERH Treatment

**TABLE 2**  
**Phase 1 - Low-Flow Groundwater Analytical Results (ug/L)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

LOCATION SAMPLE DEPTH <sup>(1)</sup> COLLECTION DATE	P-1	P-1 DUP	P-2	X-C1	X-D1	X-E1	X-E2
	31.5'	31.5'	31.5'	32.7'	31.3'	33.0'	33.0'
	4/30/2020	4/30/2020	4/30/2020	4/29/2020	4/29/2020	4/30/2020	4/30/2020
1,1-Dichloroethane	209	198	<1	<1	<1	3.0	<1
1,1-Dichloroethene	330	307	<1	1.1	<1	5.3	<1
cis-1,2-Dichloroethene	2,750	2,460	85.3 J	298	296	290	6.6
trans-1,2-Dichloroethene	63.4	62.6	3.6	5.3	13.8	6.9	<1
Tetrachloroethene	54.7	61.1	<1	<1	1.8	<1	<1
1,1,1-Trichloroethane	<10	<10	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<10	<10	<1	<1	<1	<1	<1
Trichloroethene	6,400	5,230	32.0	12.0	75.2	93.9	1.9
Vinyl Chloride	12.2	13.5	6.9	<1	30.8	19.2	<1
Bromomethane	<50	74.7	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	2,100 J	2,000 J	246 J	23.1 J	15.8 J	146 J	7.4 J
Chlorobenzene	<10	<10	<1	<1	<1	<1	1.2
Ethylbenzene	122	120	<1	<1	<1	<1	<1
Isopropylbenzene (Cumene)	53.3	56.6	<1	<1	<1	<1	<1
Toluene	13.0	19.1	<1	<1	<1	<1	<1
Xylene (Total)	198	209	3.6	<3	3.8	3.6	<3
Total VOCs	12,306	10,812	377	340	437	568	17.1

NOTES:

1. Sample depth reported in feet below ground surface.
2. Samples analyzed using EPA Method 8260.
3. All results in microgram per liter (ug/L)
4. J = Estimated concentration

**TABLE 3**  
**Phase 1 - HydraSleeve Groundwater Analytical Results (ug/L)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

LOCATION SAMPLE DEPTH <sup>(1)</sup> COLLECTION DATE	P-1		P-2		X-B3		X-B4		X-C1	
	24.6'	36.5'	25.6'	36.5'	24.6'	37.6'	24.6'	37.6'	25.0'	36.9'
	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
1,1-Dichloroethane	248	4,870	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethene	327	7,950	<1	<1	21.7	20.6	<1	<1	1.9	1.7
cis-1,2-Dichloroethene	2,990	10,700	97.4	107	460	471	41.8	42.4	416 J	386 J
trans-1,2-Dichloroethene	76.7	1,310	5.3	6.1	33.3	31.7	3.4	3.9	7.2	7.0
Tetrachloroethene	<50	6,040	<1	<1	7.0	5.9	<1	<1	<1	<1
1,1,1-Trichloroethane	<50	<50	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<50	<50	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	7,220	26,700	30.9	29.4	1,450	1,310	9.5	9.5	15.1	14.2
Vinyl Chloride	<50	221	6.4	6.9	1.9	1.8	10.2	10.7	<1	<1
1,2-Dichlorobenzene	1,820	33,600	171	162	162	145	26.9	26.9	31.6	29.6
1,3-Dichlorobenzene	<50	<50	1.1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<50	205	1.0	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	<50	<50	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	<100	<100	<2	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	125	6,530	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene (Cumene)	<50 UJ	336 J	<1 UJ							
Styrene	<50	234	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	<50	890	<1	<1	1.0	1.0	<1	<1	<1	<1
Xylene (Total)	342	11,500	3.5	<3	9.5	9.4	<3	<3	3.7	3.7
Total VOCs	13,149	111,086	317	311	2,146	1,996	91.8	93.4	476	442

NOTES:

1. Sample depth reported in feet below ground surface.
2. Samples analyzed using EPA Method 8260.
3. All results in microgram per liter (ug/L)
4. J = Estimated concentration
5. UJ = Estimated concentration, but below reporting limit

**TABLE 3**  
**Phase 1 - HydraSleeve Groundwater Analytical Results (ug/L)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

LOCATION SAMPLE DEPTH <sup>(2)</sup> COLLECTION DATE	X-C3			X-C4		X-D1		X-D2		
	24.7' 4/28/2020	36.5' 4/28/2020	36.5' DUP 4/28/2020	24.7' 4/28/2020	36.0' 4/28/2020	24.7' 4/28/2020	35.2' 4/28/2020	24.5' 4/28/2020	38.3' 4/28/2020	38.3' DUP 4/28/2020
1,1-Dichloroethane	<5	<5	<5	<1	<1	<1	<1	33.1	29.0	28.6
1,1-Dichloroethene	30.6	33.5	34.7	2.3	2.3	<1	<1	55.1	43.1	43.2
cis-1,2-Dichloroethene	2,170 J	2,220 J	1,990	692	677	247	236	4,120	3,920	2,860
trans-1,2-Dichloroethene	61.0	64.1	73.5	30.1	30.7	12.0	11.3	79.4	68.5	70.2
Tetrachloroethene	26.3	30.8	28.0	<1	<1	1.7	1.5	<5	<5	5.3
1,1,1-Trichloroethane	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Trichloroethene	1,980 J	2,100 J	1,780	28.2	25.8	59.1	55.2	600	690	692
Vinyl Chloride	<5	<5	<5	1.5	1.6	19.6	18.5	26.7	28.5	29.9
1,2-Dichlorobenzene	1,550 J	1,410	1,450	150	133	16.2	15.6	230	300	345
1,3-Dichlorobenzene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
1,4-Dichlorobenzene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Chlorobenzene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Chloroethane	<10	<10	<10	<2	2.0	<2	<2	<10	<10	<10
Ethylbenzene	<5	5.7	5.7	<1	<1	<1	<1	<5	<5	<5
Isopropylbenzene (Cumene)	<5 UJ	<5	<5 UJ	<1 UJ	<1 UJ	<1	<1	<5	<5	<5 UJ
Styrene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Toluene	<5	<5	<5	<1	<1	<1	<1	<5	<5	<5
Xylene (Total)	44.5	45.7	47.0	4.0	4.0	3.7	3.6	23.5	46.3	45.5
Total VOCs	5,862	5,910	5,409	908	876	359	342	5,168	5,125	4,120

NOTES:

1. Sample depth reported in feet below ground surface.
2. Samples analyzed using EPA Method 8260.
3. All results in microgram per liter (ug/L)
4. J = Estimated concentration
5. UJ = Estimated concentration, but below reporting limit

**TABLE 3**  
**Phase 1 - HydraSleeve Groundwater Analytical Results (ug/L)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

LOCATION SAMPLE DEPTH <sup>(2)</sup> COLLECTION DATE	X-D3		X-D4		X-E1		X-E2		X-E3	
	24.9'	37.5'	24.7'	38.2'	24.5'	37.7'	24.0'	37.6'	37.6' DUP	24.0'
	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020	4/29/2020
1,1-Dichloroethane	<5	<10	<5	<5	3.1	3.0	<1	<1	<1	1.7
1,1-Dichloroethene	60.4	66.0	11.1	13.0	4.1	3.6	<1	<1	<1	<1
cis-1,2-Dichloroethene	2,200	3,550 J	2,770 J	5,770 J	264	236 J	3.2 J	3.4 J	3.5 J	65.8 J
trans-1,2-Dichloroethene	60.7	65.2	20.1 J	21.0 J	6.0	5.1 J	<1 UJ	<1 UJ	<1 UJ	2.2 J
Tetrachloroethene	<5	<10	7.7	8.8	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1
Trichloroethylene	1,630	2,500	885	1,020	76.3	83.3	2.0	1.7	1.8	7.3
Vinyl Chloride	9.3	10.8	<5	<5	16.4	18.0	<1	<1	<1	9.7
1,2-Dichlorobenzene	459	648	137	142 J	125	220	3.1	2.1	2.0	2.9
1,3-Dichlorobenzene	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1
Chlorobenzene	<5	<10	<5	<5	<1	<1	1.1	1.0	1.0	<1
Chloroethane	<10	<20 UJ	<10	<10	<2	<2	<2	<2	<2	<2
Ethylbenzene	<5	<10	5.1	6.6	<1	<1	<1	<1	<1	<1
Isopropylbenzene (Cumene)	<5 UJ	<10	<5	<5	<1	<1	<1	<1	<1	<1
Styrene	<5	<10	<5	<5	<1	<1	<1	<1	<1	<1
Toluene	<5	<10	<5	5.2	<1	<1	<1	<1	<1	<1
Xylene (Total)	27.7	110 J	25.7 J	26.3 J	3.6	10.6 J	<3 UJ	<3 UJ	<3 UJ	<3 UJ
Total VOCs	4,447	6,950	3,862	7,013	499	580	9.4	8.2	8.3	89.6
										85.6

NOTES:

1. Sample depth reported in feet below ground surface.
2. Samples analyzed using EPA Method 8260.
3. All results in microgram per liter (ug/L)
4. J = Estimated concentration
5. UJ = Estimated concentration, but below reporting limit

**TABLE 4**  
**Phase 2 Soil Analytical Results (mg/kg)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

Location	Depth (feet bgs)	Sample Date	Acetone	2-Butanone (MEK)	Carbon disulfide	Chloro-benzene	2-Chloro-toluene	4-Chloro-toluene	1,2-DCB	1,4-DCB	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	Isopropyl-benzene (Cumene)	Naphthalene	n-Propyl-benzene	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	VC	Xylene (Total)	Total VOCs
PSGS-1	3	7/20/2020	<0.089	<0.022	<0.0089	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0089	0.01	
	6	7/20/2020	<0.079	<0.020	<0.0079	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.0044	<0.0040	0.0073	<0.0040	<0.0040	<0.0040	<0.0079	0.01	
	13	7/20/2020	<0.093	<0.023	<0.0093	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0093	ND		
	19	7/20/2020	<8.3	<0.021	<0.0085	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	4.6	0.064	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	0.051	<0.0042	<0.0042	0.0098	<0.0085	4.72
	25	7/20/2020	<0.086	<0.021	<0.0086	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	0.047	0.0064	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	0.021	<0.0043	<0.0043	<0.0043	<0.0086	0.07
	28	7/21/2020	<0.076	<0.019	<0.0076	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	0.057	0.0096	<0.0038	<0.0038	<0.0038	<0.0038	0.043	<0.0038	<0.0038	<0.0038	<0.0076	0.11		
	32	7/21/2020	<0.082	<0.021	<0.0082	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	0.064	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0082	0.06		
	39	7/21/2020	<0.077	<0.019	<0.0077	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0077	ND	
	43	7/21/2020	<0.082	<0.020	<0.0082	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0082	ND		
	43 (FD)	7/21/2020	<0.093	<0.023	<0.0093	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0093	ND		
	46	7/21/2020	<0.085	<0.021	<0.0085	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0085	ND		
PSGS-2	3	7/23/2020	<0.094	<0.024	<0.0094	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0094	ND	
	7	7/23/2020	<0.098	<0.025	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	ND	
	15	7/23/2020	<0.067	<0.017	<0.0067	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	3.6	0.039	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0067	3.60	
	20	7/23/2020	<0.092	<0.023	<0.0092	<0.0046	<0.0046	<0.0046	<0.0046	27.6	0.046	<0.0046	0.23	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	0.11	<0.0046	<0.0046	<0.0046	<0.0046	0.064	<0.0093	27.93	
	22	7/23/2020	<0.082	<0.020	<0.0082	<0.0041	<0.0041	<0.0041	0.20	<0.0041	<0.0041	0.091	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	0.061	<0.0041	0.13	<0.0041	<0.0041	<0.0041	<0.0041	0.013	0.44	
	30	7/23/2020	<0.092	<0.023	<0.0092	<0.0046	<0.0046	<0.0046	0.015	<0.0046	<0.0046	0.012	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	0.0047	<0.0046	0.077	<0.0046	<0.0046	<0.0046	<0.0046	<0.0092	0.11	
	33	7/23/2020	<0.088	<0.022	<0.0088	<0.0044	<0.0044	<0.0044	4.8	<0.0044	<0.0044	0.046	<0.0044	1.8	0.024	0.017	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	1.0	<0.0044	<0.0044	<0.0044	<0.0074	7.74
	40	7/23/2020	0.15	0.026	<0.0096	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	0.048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	0.18		
	42	7/23/2020	<0.083	<0.021	<0.0083	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	0.017	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0083	0.02		
	46	7/23/2020	<0.079	<0.020	<0.0079	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0079	ND		
PSGS-3	5	8/3/2																									

**TABLE 4**  
**Phase 2 Soil Analytical Results (mg/kg)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

Location	Depth (feet bgs)	Sample Date	Acetone	2-Butanone (MEK)	Carbon disulfide	Chloro-benzene	2-Chloro-toluene	4-Chloro-toluene	1,2-DCB	1,4-DCB	1,1-DCA	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	Isopropyl-benzene (Cumene)	Naphthalene	n-Propyl-benzene	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	VC	Xylene (Total)	Total VOCs	
PSGS-6	5	8/6/2020	<0.10	<0.025	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	ND	
	10	8/6/2020	0.25	<0.019	<0.0075	<0.0037	<0.0037	<0.0037	0.076	<0.0037	<0.0037	0.14 J	<0.0037	0.015 J	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	0.023	0.51	
	15	8/6/2020	<3.9	<0.98	<0.39	<0.20	<0.20	<0.20	19.2	<0.20	<0.20	4.6	<0.20	4.3	<0.20	<0.20	<0.20	<0.20	9.1	0.55	20.2	<0.20	<0.20	<0.20	17.1	75.05	
	16	8/6/2020	0.21	<0.019	<0.0075	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	2.9	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	5.02		
	24	8/6/2020	<0.074	<0.019	<0.0074	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0074	ND		
	30	8/6/2020	<0.087	<0.022	<0.0087	<0.0044	<0.0044	<0.0044	50.3	0.0051	<0.0044	0.0079	1.6	0.0097	<0.0044	<0.0044	<0.0044	<0.0044	0.0046	<0.0044	4.7	<0.0044	<0.0044	<0.0044	<0.0087	56.63	
	30 (FD)	8/6/2020	<0.082	<0.021	<0.0082	<0.0041	<0.0041	<0.0041	42.9	0.0058	<0.0041	0.0077	1.3	0.0092	<0.0041	<0.0041	<0.0041	<0.0041	0.0052	<0.0041	3.6	<0.0041	<0.0041	<0.0041	0.0096	47.84	
	34	8/6/2020	<4.1	<1.0	<0.41	<0.21	<0.21	<0.21	13.2	<0.21	<0.21	13.8	0.61	0.47	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	11.6	<0.21	<0.21	<0.21	4.9	44.58	
	36	8/6/2020	<4.0	<1.0	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	7.9	0.52	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	2.2	<0.20	<0.20	<0.20	<0.40	10.62	
	44	8/6/2020	<0.085	<0.021	<0.0085	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0085	ND		
	46	8/6/2020	<0.077	<0.019	<0.0077	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0077	ND		
PSGS-7	4	7/27/2020	<0.10	<0.026	<0.010	<0.0052	<0.0052	<0.0052	0.029	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.010	0.03		
	9	7/27/2020	1.0	<0.020	0.078	0.0044 J	<0.0039	<0.0039	6.9	0.0073 J	<0.0039	0.0039	1.4	0.025	0.042 J	<0.0039	<0.0039	<0.0039	0.0043 J	0.0554 J	0.027	<0.0039	<0.0039	<0.0039	0.12 J	9.54	
	13	7/27/2020	0.94	<0.018	<0.0074	<0.0037	<0.0037	<0.0037	0.0043 J	<0.0037	<0.0037	11.2	0.071	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0074	12.22		
	19	7/27/2020	0.14	<0.020	<0.0081	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0081	0.14		
	24	7/28/2020	<0.076	<0.019	<0.0076	<0.0038	<0.0038	<0.0038	0.0061 J	<0.0038	<0.0038	0.027	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0076	0.03		
	29	7/28/2020	<0.097	<0.024	<0.0097	<0.0048	<0.0048	<0.0048	0.17	<0.0048	<0.0048	0.41	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	0.0079	<0.0048	0.034	<0.0048	<0.0048	<0.0097	0.25		
	35	7/28/2020	<0.087	<0.022	<0.0087	<0.0043	<0.0043	<0.0043	3.3	0.0060	<0.0043	0.0043	3.7	0.34	0.0868 J	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.028 J	7.59
	39	7/28/2020	<0.13	<0.033	<0.013	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	0.055	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067	<0.013	0.08		
	44	7/28/2020	<0.096	<0.024	<0.0096	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	ND		
	46	7/28/2020	<0.084	<0.021	<0.0084	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0084	ND		
PSGS-8	5	7/28/2020	0.27	<0.019	0.087	<0.0038	<0.0038	<0.0038	0.20 J	<0.0038	<0.0038	0.68	0.037 J	0.0668 J	<0.0038	<0.0038	<0.0038	1.6	<0.0038	7.1	<0.0038	<0.0038	<0.0038	<0.0038	<0.020 J	9.92	

**TABLE 4**  
**Phase 2 Soil Analytical Results (mg/kg)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

Location	Depth (feet bgs)	Sample Date	Acetone	2-Butanone (MEK)	Carbon disulfide	Chloro-benzene	2-Chloro-toluene	4-Chloro-toluene	1,2-DCB	1,4-DCB	1,1-DCA	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	Isopropyl-benzene (Cumene)	Naphthalene	n-Propyl-benzene	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	VC	Xylene (Total)	Total VOCs
PSGS-11	5	7/30/2020	<0.092	<0.023	<0.0092	<0.0046	<0.0046	<0.0046	0.092	<0.0046	<0.0046	<0.0046	13.4	0.17	<0.0046	<0.0046	<0.0046	0.015	<0.0046	0.067	<0.0046	<0.0046	<0.0046	<0.0046	<0.0092	13.74
	7	7/30/2020	0.83	<0.020	0.013	<0.0040	<0.0040	<0.0040	0.053	<0.0040	<0.0040	<0.0040	5.5	0.060	0.0065	<0.0040	<0.0040	<0.0040	0.0043	0.0052	0.032	<0.0040	<0.0040	<0.0040	0.011	6.52
	13	7/30/2020	<0.075	<0.019	<0.0075	<0.0038	<0.0038	<0.0038	46.9	<0.0038	<0.0038	<0.0054	0.17	0.0055	0.033	<0.0038	<0.0038	<0.0038	0.20	0.014	21.8	<0.0038	<0.0038	<0.0038	0.15	69.28
	17	7/30/2020	0.41	<0.019	<0.0078	<0.0039	<0.0039	<0.0039	0.0058	<0.0039	<0.0039	<0.0039	1.5	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	0.0054	<0.0039	0.012	<0.0039	<0.0039	<0.0039	<0.0078	1.93
	25	7/30/2020	<0.092	<0.023	<0.0092	<0.0046	<0.0046	<0.0046	0.016	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0050	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0092	0.02
	30	7/30/2020	<0.10	<0.025	<0.010	<0.0051	<0.0051	<0.0051	20.6	<0.0051	<0.0051	<0.0051	0.13	0.0055	<0.0051	<0.0051	<0.0051	<0.0051	0.061	<0.0051	5.0	<0.0051	<0.0051	<0.0051	0.011	25.81
	32	7/30/2020	<0.11	<0.027	<0.011	<0.0054	<0.0054	<0.0054	88.2	0.047	<0.0054	0.014	3.1	0.064	0.093	<0.0054	<0.0054	0.21	<0.0054	4.9	<0.0054	<0.0054	<0.0054	<0.0054	0.21	96.85
	40	7/30/2020	<0.068	<0.019	<0.0076	<0.0038	<0.0038	<0.0038	0.0066	<0.0038	<0.0038	<0.0038	0.033	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	0.0077	<0.0038	<0.0038	<0.0038	<0.0076	0.05
	44	7/30/2020	<374	<93.5	<37.4	<18.7	<18.7	<18.7	377	<18.7	<18.7	5.0 J	5.9 J	<18.7	49.8	<18.7	<18.7	<18.7	295	8.6 J	1,610 J	<18.7	<18.7	<18.7	209	2560.30
	46	7/30/2020	0.090	<0.017	<0.0069	<0.0034	<0.0034	<0.0034	0.0065	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.016	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0069	0.11
PSGS-12	5	7/31/2020	0.11	<0.021	0.027	<0.0042	<0.0042	0.22 J	<0.0042	<0.0042	0.040	0.0073	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0084	0.40
	6	7/31/2020	<0.12	<0.031	<0.012	<0.0062	<0.0062	<0.0062	1.9	<0.0062	<0.0062	<0.0062	0.020	<0.0062	0.0078	<0.0062	<0.0062	<0.0062	0.031	<0.0062	0.064	<0.0062	<0.0062	<0.0062	0.025	0.15
	12	7/31/2020	<0.79	<0.020	<0.0079	0.0078 J	<0.0040	<0.0040	0.15 J	<0.0040	<0.0040	0.014	5.6	0.14	0.11 J	<0.0040	<0.0040	<0.0040	0.15 J	16.9	<0.0040	<0.0040	<0.0040	<0.0040	<0.0077	23.54
	16	7/31/2020	0.13	<0.019	<0.0077	<0.0039	<0.0039	<0.0039	0.0048 J	<0.0039	<0.0039	<0.0039	0.011	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	0.010	<0.0039	<0.0039	<0.0039	<0.0077	0.16
	25	7/31/2020	<0.080	<0.020	<0.0080	<0.0040	<0.0040	<0.0040	8.2	<0.0040	<0.0040	<0.0087	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.016	<0.0040	<0.0040	<0.0040	<0.0080	8.22	
	30	7/31/2020	<0.080	<0.020	<0.0080	<0.0040	<0.0040	<0.0040	47.5	0.029 J	<0.0040	<0.0040	0.083	0.0051	<0.0040	<0.0040	<0.0040	<0.0040	0.019	<0.0040	1.5	<0.0040	<0.0040	<0.0040	0.014	49.15
	31	7/31/2020	<0.076	<0.019	<0.0076	<0.0038	0.0080 J	<0.0038	89.6	0.13 J	<0.0038	0.0048	0.93	0.018	0.11	<0.0038	0.0077 J	<0.0038	0.0058	0.19	0.0055 J	0.0054 J	<0.0038	0.098	91.13	
	37	7/31/2020	0.23	<0.031	<0.013	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063	<0.013	0.23	
	43	7/31/2020	0.23	0.11	<0.010	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.010	0.34	
	43 (FD)	7/31/2020	0.24	0.14	<0.0096	<0.0048	<0.0048	<0.0048	0.0048	<0.0048	<0.0048	<0.0048	0.015	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0096	0.40
	46	7/31/2020	<0.069	<0.017	<0.0069	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0069	ND
PSGS-13	4	8/13/2020	<0.080	<0.020	<0.0080	<0.0040	<0.0040	0.094 J	<0.0040	<0.0040	<0.0040	3.9	0.13 J	<0.0040	<0.0040	<0.0040	<0.0040	0.056 J	<0.0040							

**TABLE 4**  
**Phase 2 Soil Analytical Results (mg/kg)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

Location	Depth (feet bgs)	Sample Date	Acetone	2-Butanone (MEK)	Carbon disulfide	Chloro-benzene	2-Chloro-toluene	4-Chloro-toluene	1,2-DCB	1,4-DCB	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	Isopropyl-benzene (Cumene)	Naphthalene	n-Propyl-benzene	Styrene	PCE	Toluene	TCE	1,2,4-TMB	1,3,5-TMB	VC	Xylene (Total)	Total VOCs
PSGS-16	4	8/11/2020	<0.084	<0.021	<0.0084	<0.0042	<0.0042	<0.0042	6.7	<0.0042	<0.0042	<0.0042	5.3	0.20	0.043	<0.0042	<0.0042	<0.0042	0.011	0.040	<0.0042	<0.0042	0.0077	0.097	12.41		
	8	8/11/2020	0.17	0.044	0.010	0.041	<0.0048	<0.0048	1.1	<0.0048	<0.0048	<0.0048	0.023	<0.0048	0.013	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	0.049	1.45		
	12	8/11/2020	<0.082	<0.021	<0.0082	<0.0041	<0.0041	<0.0041	0.010 J	<0.0041	<0.0041	<0.0041	0.94	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0082	0.95	
	19	8/11/2020	0.22	0.073	<0.0073	<0.0036	<0.0036	<0.0036	0.0036	<0.0036	<0.0036	<0.0036	0.039 J	<0.0038	0.024	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	0.099 J	0.10
	21	8/11/2020	<0.076	<0.019	<0.0076	<0.0038	<0.0038	<0.0038	0.039 J	<0.0038	<0.0038	<0.0038	0.039 J	<0.0038	0.024	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	0.099 J	0.10	
	30	8/11/2020	<0.074	<0.018	0.0090	<0.0037	<0.0037	<0.0037	0.0037	<0.0037	<0.0037	<0.0037	19.3	0.011 J	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	0.018	19.42
	35	8/11/2020	<0.077	<0.019	<0.0077	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	0.064	0.0061	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0077	0.07	
	40	8/11/2020	0.14	<0.025	<0.0099	<0.0049	<0.0049	<0.0049	0.014 J	<0.0049	<0.0049	<0.0049	0.23	0.074	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	0.014	0.72	
	44	8/11/2020	<43.5	<10.9	<4.3	<2.2	<2.2	<2.2	4.5	<2.2	<2.2	<2.2	22.4	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<4.3	53.80	
	46	8/11/2020	<42.8	<10.7	<4.3	<2.1	<2.1	<2.1	49.9	<2.1	<2.1	<2.1	48.9	<2.1	5.5	<2.1	<2.1	<2.1	<2.1	6.0	<2.1	26.5	<2.1	<2.1	<2.1	22.9	159.70
PSGS-17	4	8/12/2020	<0.11	<0.027	<0.011	<0.0053	<0.0053	<0.0053	6.4	<0.0053	<0.0053	<0.0053	0.020 J	<0.0053	0.010 J	<0.0053	<0.0053	<0.0053	<0.0053	0.029 J	<0.0053	0.13 J	<0.0053	<0.0053	<0.0053	0.032 J	6.62
	7	8/12/2020	0.69	0.15	0.039	<0.0042	<0.0042	<0.0042	0.20 J	<0.0042	<0.0042	<0.0042	0.086	0.013	0.012	<0.0042	<0.0042	<0.0042	<0.0042	0.013	<0.0042	0.12	<0.0042	<0.0042	<0.0042	0.031	1.35
	13	8/12/2020	0.41	<0.023	<0.0094	0.0089 J	0.0052 J	<0.0047	12.3	0.022 J	<0.0047	0.0096	2.7	0.061	1.3	0.0069 J	<0.0047	<0.0047	<0.0047	1.4	0.13 J	6.5	<0.0047	<0.0047	<0.0047	4.8	29.65
	17	8/12/2020	0.31	<0.023	<0.0091	<0.0046	<0.0046	<0.0046	3.4	0.0068 J	<0.0046	<0.0046	1.6	0.0059	0.047 J	<0.0046	<0.0046	<0.0046	<0.0046	0.035 J	0.019 J	0.17	<0.0046	<0.0046	<0.0046	0.21 J	5.80
	22	8/12/2020	<0.10	<0.026	<0.010	<0.0051	<0.0051	<0.0051	0.17 J	<0.0051	<0.0051	<0.0051	0.010	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.010	0.19
	30	8/12/2020	<0.11	<0.028	<0.011	<0.0057	<0.0057	<0.0057	37.8	0.015	<0.0057	<0.0057	1.5	0.011	<0.0057	<0.0057	<0.0057	<0.0057	0.021	<0.0057	0.17	<0.0057	<0.0057	<0.0057	0.015	39.53	
	32	8/12/2020	<0.091	<0.023	<0.0091	<0.0045	<0.0045	<0.0045	8.9	0.012 J	<0.0045	<0.0060	3.4	0.20	<0.0045	<0.0045	<0.0045	<0.0045	0.036	0.016	2.1	<0.0045	<0.0045	<0.0045	0.15	0.30	15.19
	40	8/12/2020	0.21	<0.028	<0.011	<0.0055	<0.0055	<0.0055	0.030 J	<0.0055	<0.0055	<0.0055	0.014	3.6	0.61	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	0.014	0.32	<0.0055	<0.0055	<0.0055	0.017	4.82
	40 (FD)	8/12/2020	0.21	<0.046	<0.018	<0.0092	<0.0092	<0.0092	0.027 J	<0.0092	<0.0092	<0.0092	0.013	3.8	0.44	<0.0092	<0.0092	<0.0092	<0.0092	0.014	0.53	<0.0092	<0.0092	<0.0092	0.019	5.05	
	42	8/12/2020	0.087	<0.020	<0.0082	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	0.071	0.0059	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	0.011	<0.0041	<0.0041	<0.0041	<0.0082	0.17	
	46	8/12/2020	<0.082	<0.020	<0.0082	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	ND		

Notes:

1. Samples analyzed using EPA Method 8260.

2. All results in milligrams per kilogram (mg/kg).

Abbreviations:

< = compound not detected at or above the laboratory reporting limit shown

**TABLE 5**  
**Phase 2 Groundwater Analytical Results (ug/L)**  
**DNAPL Containment Area**  
**Third Site Superfund Site, Zionsville, Indiana**

LOCATION	PSGS-1	PSGS-2 <sup>(4)</sup>	PSGS-3	PSGS-4 <sup>(4)</sup>	PSGS-5	PSGS-6	PSGS-7 <sup>(4)</sup>	PSGS-7 (FD) <sup>(4)</sup>	PSGS-8	PSGS-9	PSGS-10 <sup>(4)</sup>	PSGS-11	PSGS-12 <sup>(4)</sup>	PSGS-13	PSGS-14	PSGS-15	PSGS-16 <sup>(4)</sup>	PSGS-16 (FD) <sup>(4)</sup>	PSGS-17
SAMPLE DEPTH <sup>(1)</sup>	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	41-46	
COLLECTION DATE	7/21/2020	8/04/2020	8/04/2020	8/14/2020	7/24/2020	8/06/2020	8/04/2020	8/04/2020	7/29/2020	8/07/2020	8/14/2020	7/30/2020	8/04/2020	8/13/2020	8/05/2020	8/11/2020	8/14/2020	8/14/2020	8/12/2020
<b>Acetone</b>	Dry	30.8 J	981 J	1,000	173	Dry	185	75.2	80.4 J	341	394	16,000 J	482	Dry	171	<20000	2,610	2,670	Dry
<b>2-Butanone (MEK)</b>	Dry	<20	335	75.3	35.1	Dry	<100	<20	<20	45.2	<20	<20000	162	Dry	20.1	<20000	<20	<20	Dry
<b>Chloroform</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	<1.0	<1.0	1.4	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>1,2-Dichlorobenzene</b>	Dry	1.5 J	<1.0	1.1	4.5	Dry	5.9	6.4	6,130	<1.0	294	4,210	<1.0	Dry	<1.0	4,340	5.9	5.3	Dry
<b>1,3-Dichlorobenzene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	1.7	<1.0	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry	
<b>1,4-Dichlorobenzene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	63.8	<1.0	1.2	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>1,1-Dichloroethane</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	43.1	<1.0	<1.0	2,360	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>1,1-Dichloroethene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	67.2	<1.0	17.2	<1000	<1.0	Dry	<1.0	<1000	64.9	59.5	Dry
<b>cis-1,2-Dichloroethene</b>	Dry	51.6	5.2	2.9	90	Dry	<5.0	4.5	621	4.0	7,220	4,450	17.4	Dry	<1.0	42,400	10,900	10,700	Dry
<b>trans-1,2-Dichloroethene</b>	Dry	1.1 J	<1.0	<1.0	1.1	Dry	<5.0	<1.0	38.0	<1.0	197	<1000	<1.0	Dry	<1.0	<1000	223	167	Dry
<b>Ethylbenzene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	621	<1.0	16.1	723 J	<1.0	Dry	<1.0	<1000	10.6	9.8	Dry
<b>Isopropylbenzene (Cumene)</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	56.3	<1.0	<1.0	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>Naphthalene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	2.7	<1.0	<1.0	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>n-Propylbenzene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	11.0	<1.0	<1.0	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>Styrene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	29.3	<1.0	<1.0	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>Tetrachloroethene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	3,450	<1.0	17.0	1,650	<1.0	Dry	<1.0	1,290	<1.0	<1.0	Dry
<b>Toluene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	111	<1.0	25.6	414 J	<1.0	Dry	<1.0	<1000	13.1	11.2	Dry
<b>1,2,4-Trichlorobenzene</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	3.9	<1.0	<1.0	<1000	<1.0	Dry	<1.0	<1000	<1.0	<1.0	Dry
<b>Trichloroethene</b>	Dry	<1.0	<1.0	<1.0	53.3	Dry	<5.0	<1.0	8,720	<1.0	1,010	98,600	<1.0	Dry	<1.0	21,200	3.3	3.0	Dry
<b>1,2,4-Trimethylbenzene</b>	Dry	<5.0	<5.0	<5.0	<5.0	Dry	<25	<5.0	9.4	<5.0	<5.0	<5000	<5.0	Dry	<5.0	<5000	<5.0	<5.0	Dry
<b>Vinyl Chloride</b>	Dry	<1.0	<1.0	<1.0	<1.0	Dry	<5.0	<1.0	4.4	<1.0	345	<1000	<1.0	Dry	<1.0	<1000	24.6	21.6	Dry
<b>Xylene (Total)</b>	Dry	<3.0	<3.0	<3.0	<3.0	Dry	<15	<3.0	2,490	<3.0	75.9	<3000	<3.0	Dry	<3.0	<3000	39.1	35.4	Dry
<b>Total VOCs (excluding acetone)</b>	Dry	54	340	79	184	Dry	6	11	22,474	49	9,220	112,407	179	Dry	20	69,230	11,285	11,013	Dry
<b>Total VOCs</b>	Dry	85	1,321	1,079	357	Dry	191	86	22,554	390	9,614	128,407	661	Dry	191	69,230	13,895	13,683	Dry

NOTES:

1. Sample depth reported in feet below ground surface.
2. Samples analyzed using EPA Method 8260.
3. All results in microgram per liter (ug/L)
4. Samples collected using low flow methodology.
5. J = Estimated concentration

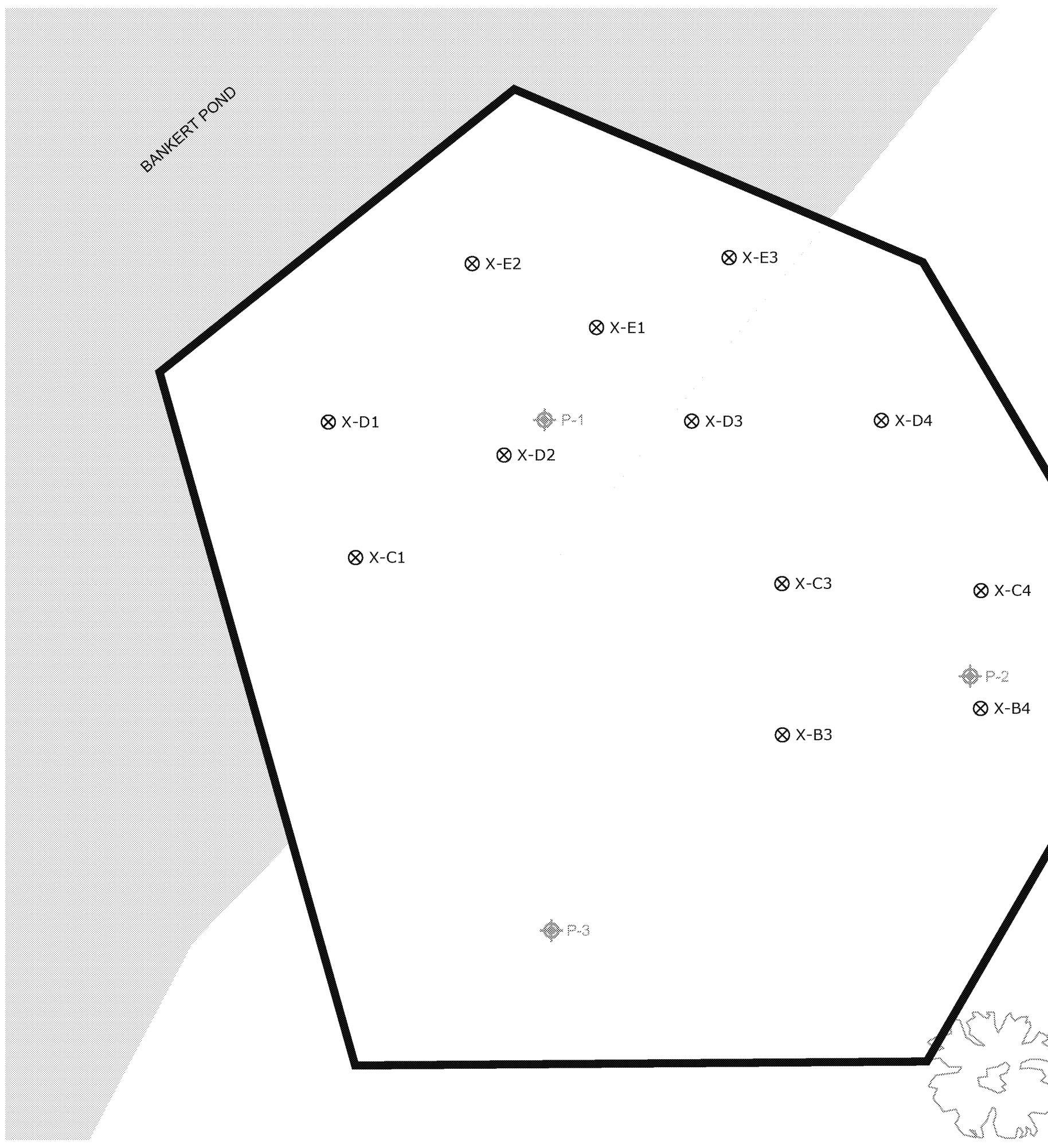
## FIGURES

TR0485D

September 2020



LEGEND
◆ SHEET PILE WALL
◆ PIEZOMETER
⊗ MCMILLAN MCGEE CORP. EXTRACTION WELL



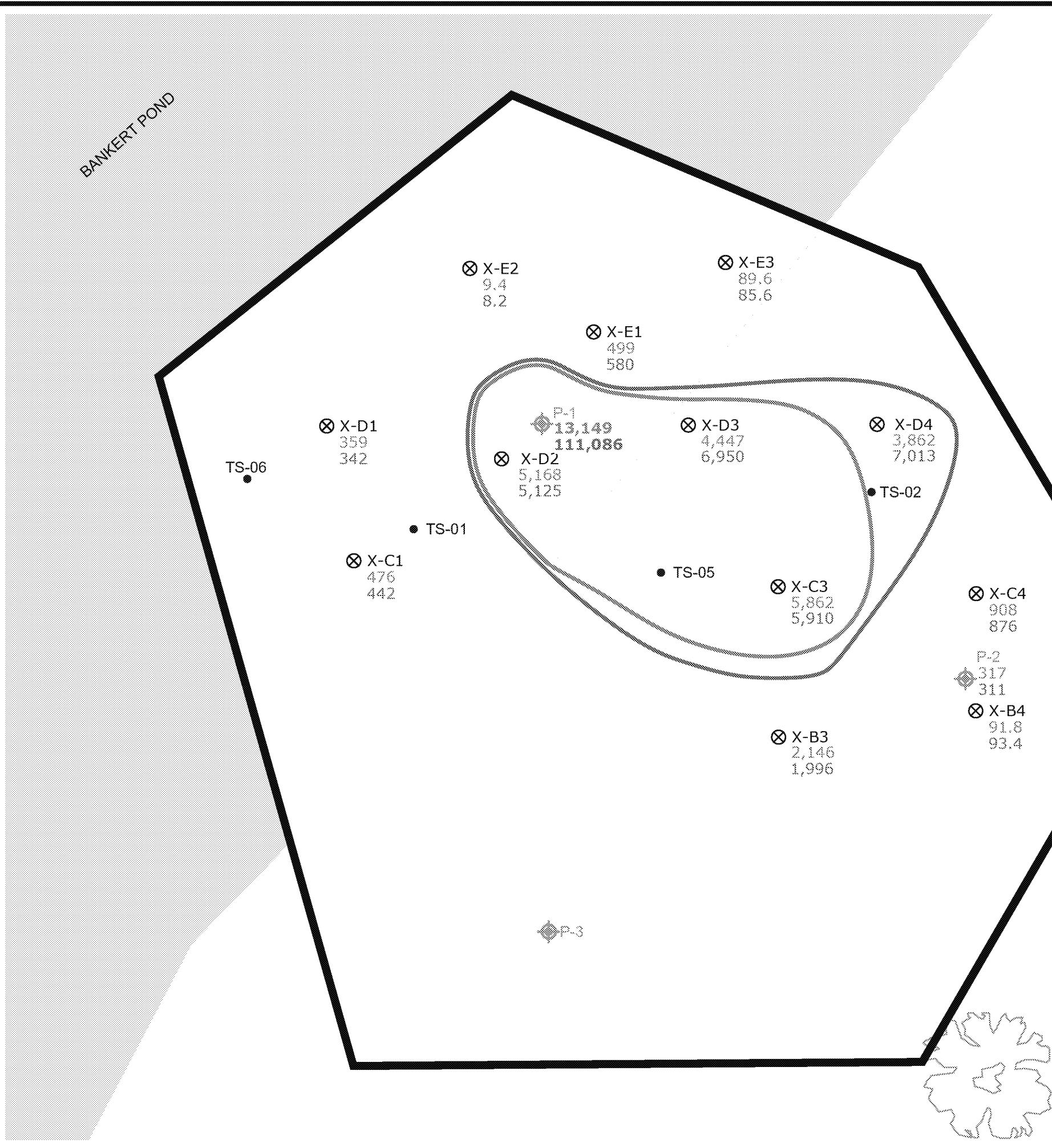
**PLAN VIEW**  
(DURING DNAPL AREA ERH PHASE)

0 10  
SCALE IN FEET

**GROUNDWATER  
SAMPLING LOCATIONS,  
DNAPL CONTAINMENT AREA**  
THIRD SITE  
985 SOUTH U.S. HIGHWAY 421  
ZIONSVILLE, INDIANA

RAMBOLL

**FIGURE  
1**



PLAN VIEW  
(DURING DNAPL AREA ERH PHASE)

LEGEND	
	SHEET PILE WALL
	PIEZOMETER
	MCMILLAN MCGEE CORP. EXTRACTION WELL
●	2014 SOIL BORING LOCATION
—	TVOCs 4,285 µg/L ISOCONTOUR (AT ~25 FTBGS)
—	TVOCS 4,285 µg/L ISOCONTOUR (AT ~37 FTBGS)

Performance Standards for ERH Treatment (Total VOCs) <sup>(3)</sup>	4,285
---	-------

Notes:

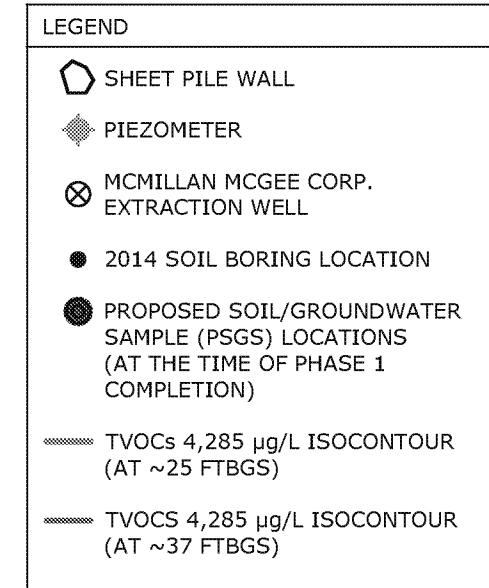
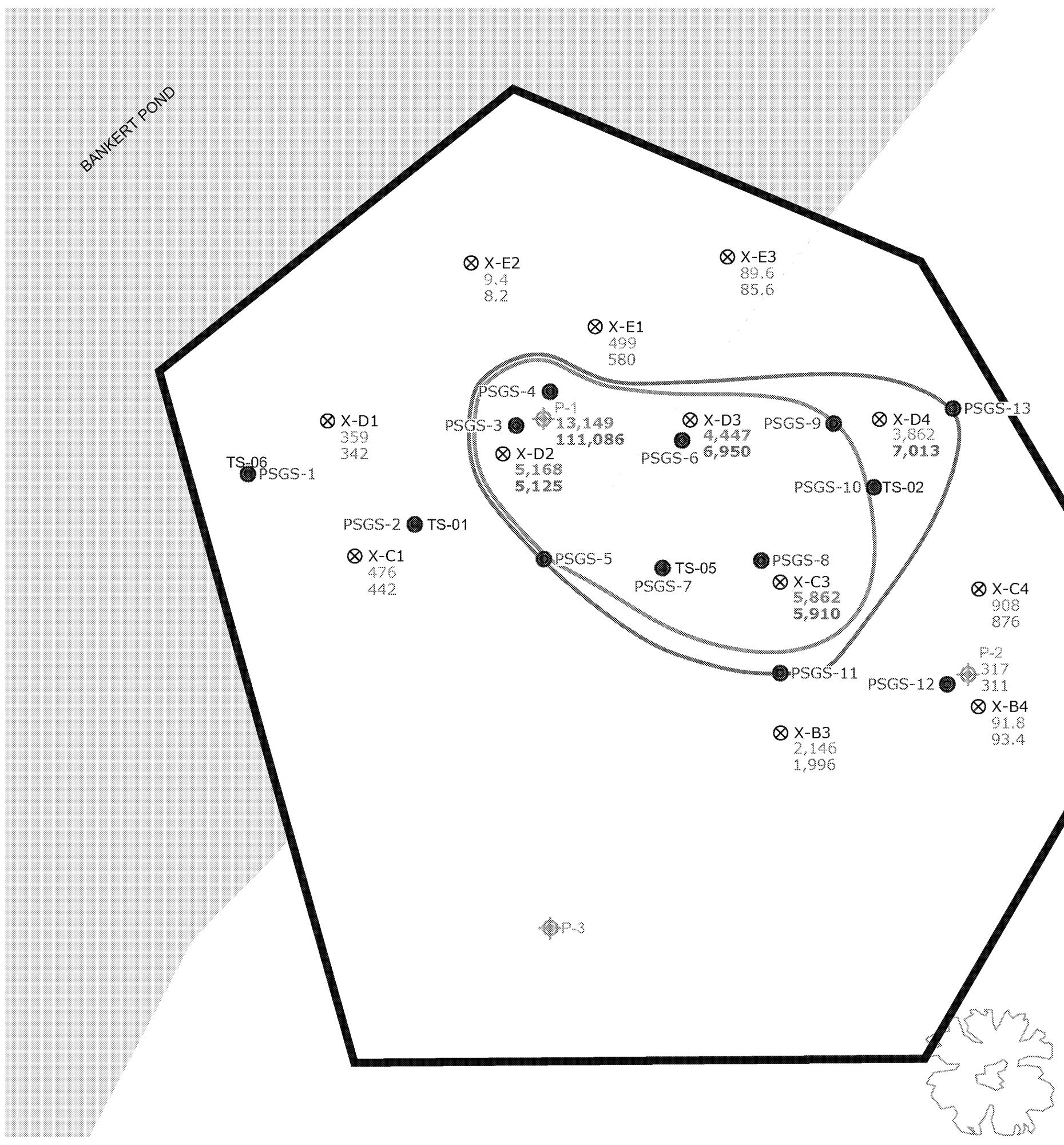
1. TVOCs = Total Volatile Organic Compounds
2. FTBGS = Feet Below Ground Surface
3. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
4. Sample depths reported in feet below ground surface.
5. Samples analyzed using EPA Method 8260.
6. All results in microgram per liter (µg/L).
7. **Bold** indicates result exceeds Performance Standards for ERH Treatment.
8. Groundwater data shown on Figure 2 is also presented in Tables 2 & 3.

0 10  
SCALE IN FEET

PHASE 1 GROUNDWATER ANALYTICAL RESULTS (µg/L), DNAPL CONTAINMENT AREA  
THIRD SITE  
985 SOUTH U.S. HIGHWAY 421  
ZIONSVILLE, INDIANA

RAMBOLL

FIGURE  
2



Performance Standards for ERH Treatment (Total VOCs) <sup>(3)</sup>	4,285
---	-------

- Notes:
1. TVOCs = Total Volatile Organic Compounds
  2. FTBGS = Feet Below Ground Surface
  3. Performance standards per Table 5 of the April 2018 Remedial Design Report prepared by McMillan-McGee Corp.
  4. Sample depths reported in feet below ground surface.
  5. Samples analyzed using EPA Method 8260.
  6. All results in microgram per liter ( $\mu\text{g}/\text{L}$ ).
  7. **Bold** indicates result exceeds Performance Standards for ERH Treatment.
  8. PSGS - 15th location was to be determined based on results of other 14 locations.
  9. Groundwater data shown on Figure 3 is also presented in Table 3.

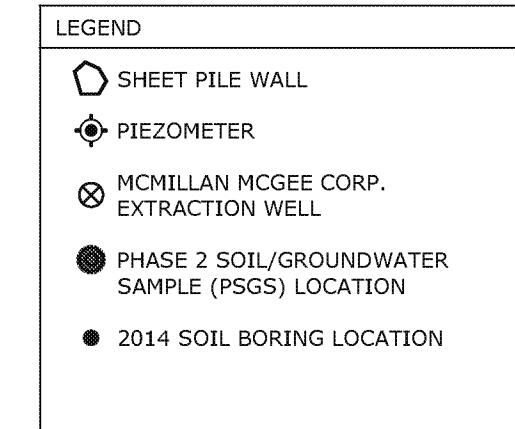
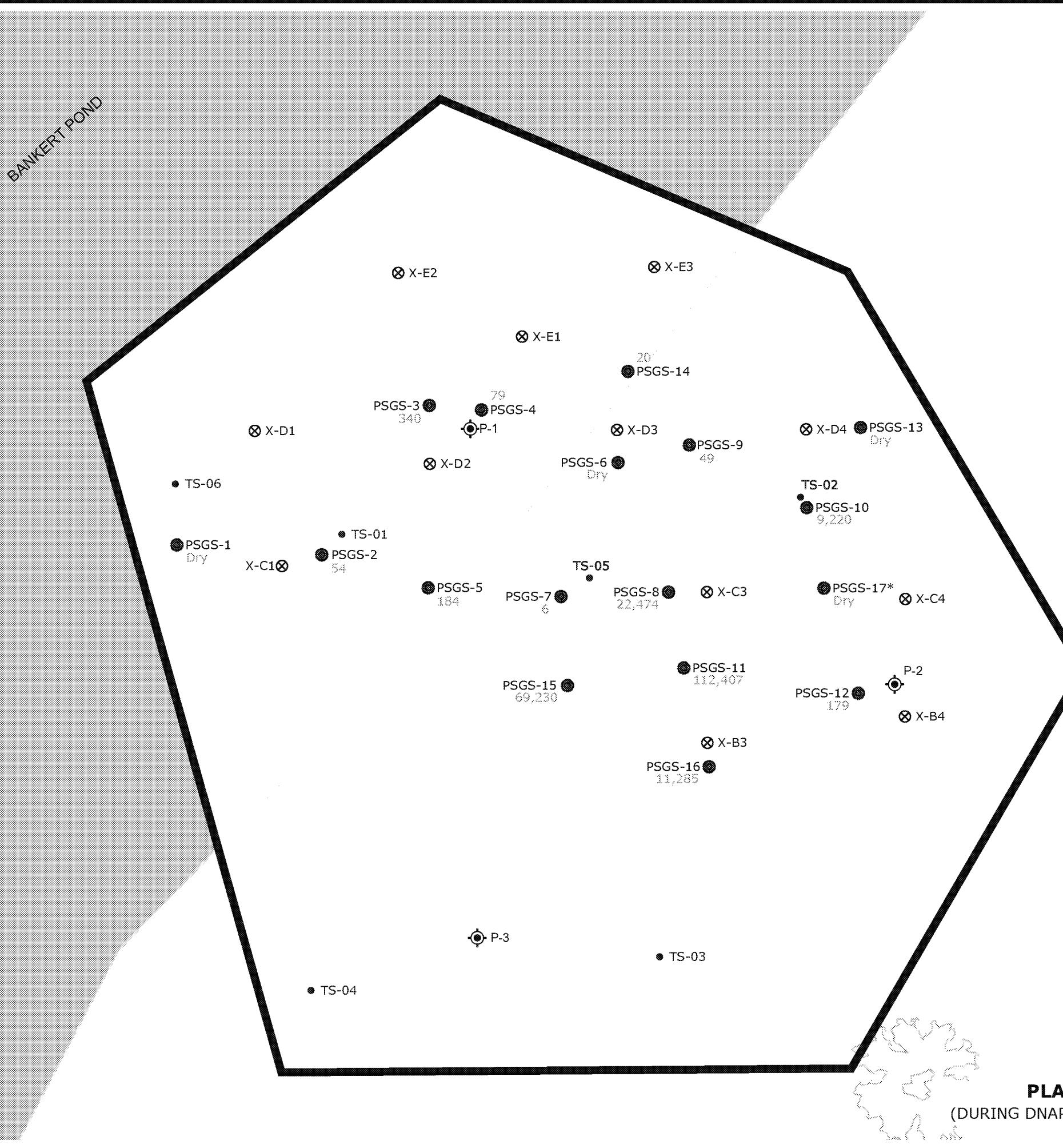
0 10  
SCALE IN FEET

**PHASE 1 GROUNDWATER ANALYTICAL RESULTS ( $\mu\text{g}/\text{L}$ ) AND PHASE 2 SAMPLING LOCATIONS, DNAPL CONTAINMENT AREA**  
THIRD SITE  
985 SOUTH U.S. HIGHWAY 421  
ZIONSVILLE, INDIANA

**RAMBOLL**

**FIGURE  
3**

**PLAN VIEW**  
(DURING DNAPL AREA ERH PHASE)



Notes:

1. TVOCs = Total Volatile Organic Compounds (excluding acetone)
2. Sample depths reported in feet below ground surface. Samples from 41 to 46 ft.
3. Samples analyzed using EPA Method 8260.
4. All results in microgram per liter ( $\mu\text{g}/\text{L}$ ).

\* Location requested by USEPA.

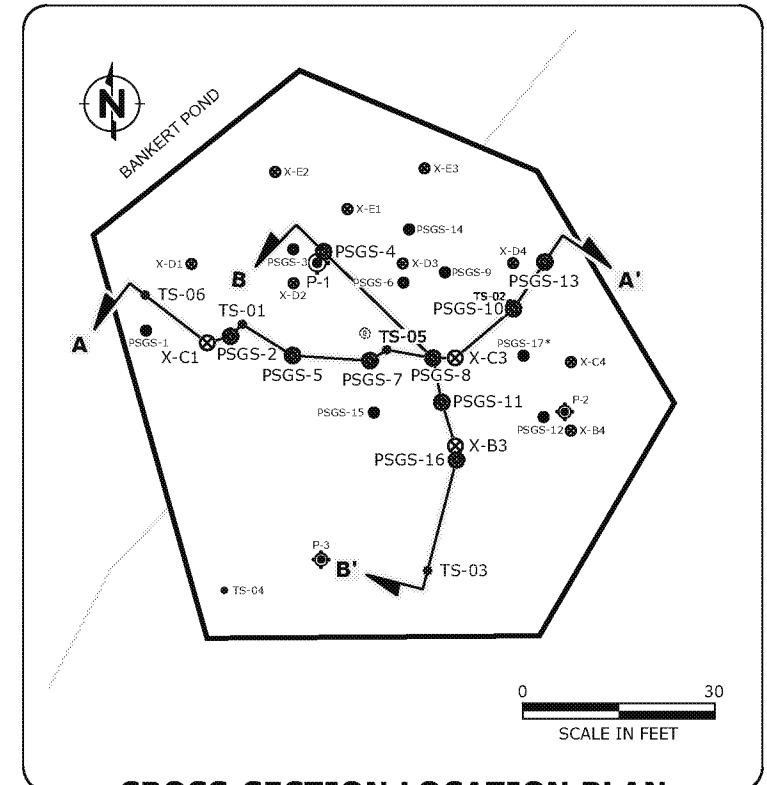
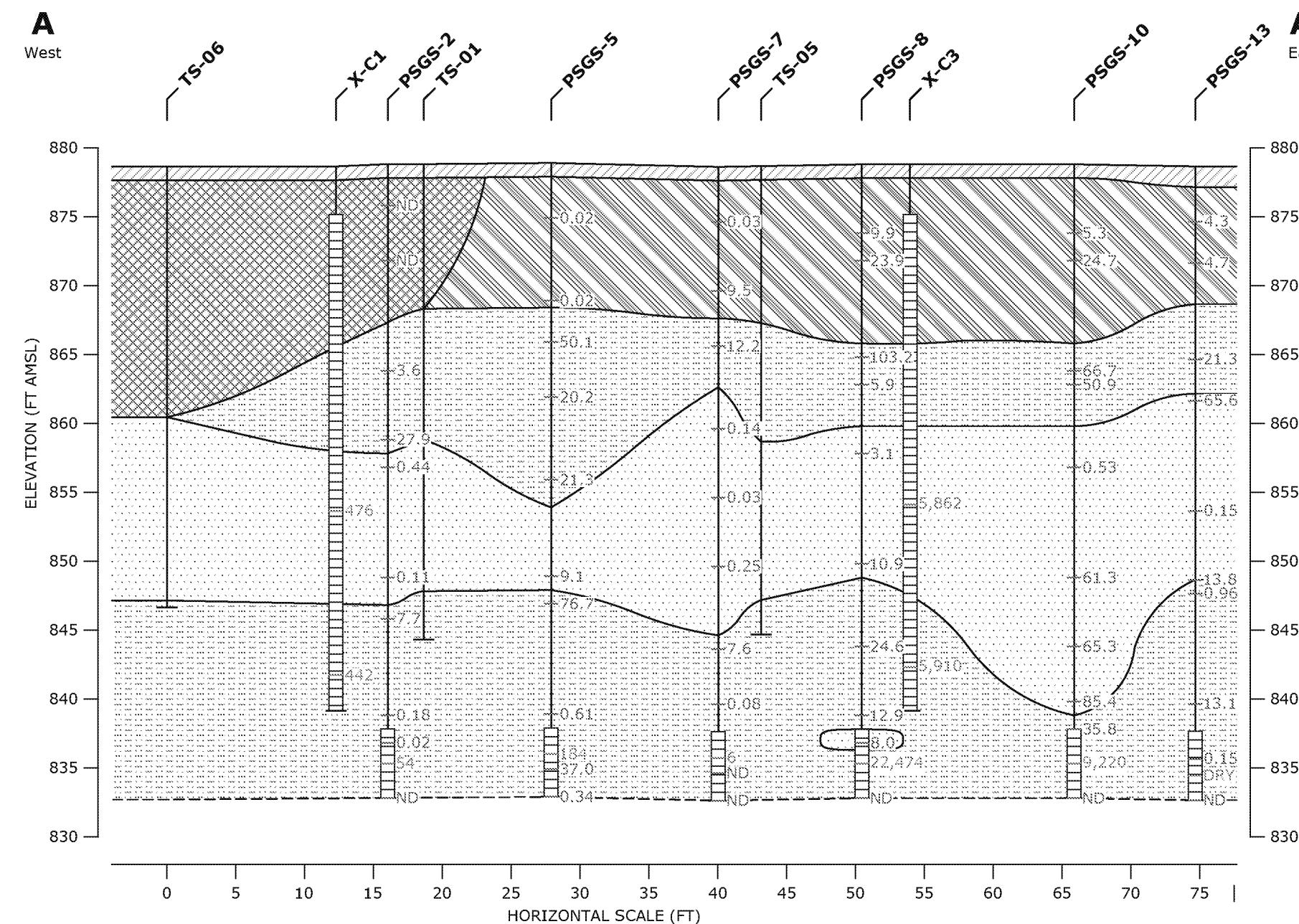
0 10  
SCALE IN FEET

**PHASE 2 GROUNDWATER ANALYTICAL RESULTS ( $\mu\text{g}/\text{L}$ ), DNAPL CONTAINMENT AREA THIRD SITE  
985 SOUTH U.S. HIGHWAY 421 ZIONSVILLE, INDIANA**

**PLAN VIEW**  
(DURING DNAPL AREA ERH PHASE)

**RAMBOLL**

**FIGURE  
4**



## **CROSS-SECTION LOCATION PLAN**

LEGEND		LITHOLOGY
	SOLID RISER	
	SAMPLE INTERVAL	
79	TOTAL VOLATILE ORGANIC COMPOUND (VOC) IN GROUNDWATER (EXCLUDING ACETONE) ( $\mu\text{g/L}$ )	
5.3	TOTAL VOLATILE ORGANIC COMPOUND (VOC) IN SOIL (mg/kg)	
		CONCRETE
		FILL/SAND
		PROBABLE FILL
		SAND
		SILTY CLAY

## Notes:

$\mu\text{g/L}$  = Micrograms per liter

**mg/kg = Milligrams per kilogram**

ND = Not detected

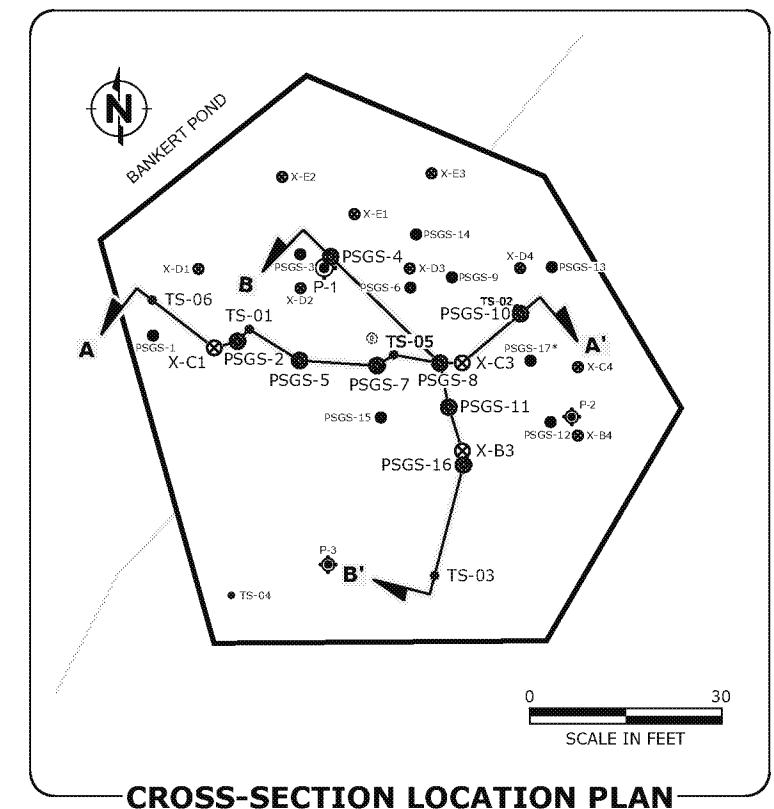
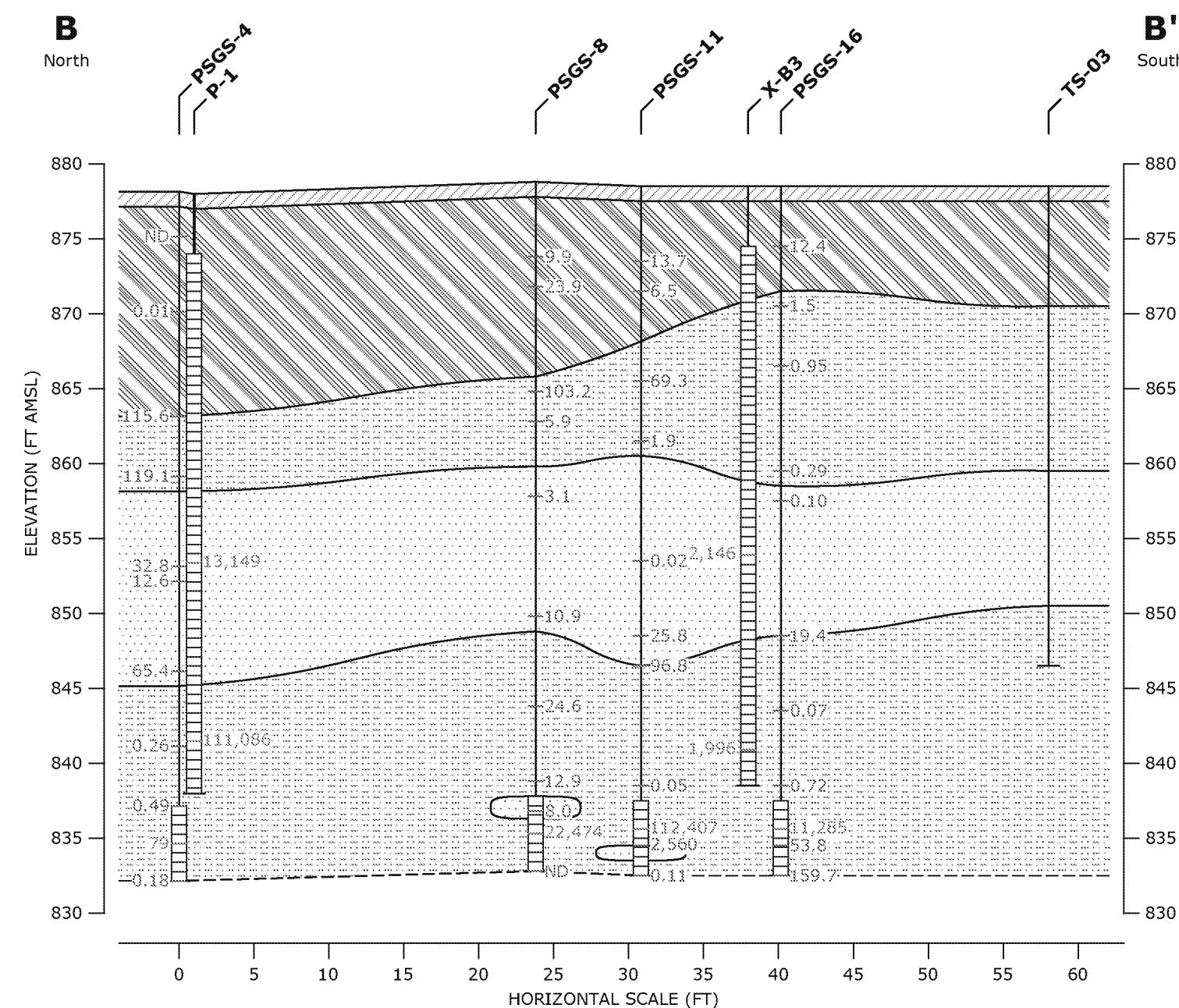
Analytical results collected between April and August 2020.

#### CROSS-SECTION A - A'

**THIRD SITE  
985 SOUTH U.S. HIGHWAY 421  
ZIONSVILLE, INDIANA**

RAMBOLL

## FIGURE 5



**CROSS-SECTION B - B'**  
THIRD SITE  
985 SOUTH U.S. HIGHWAY 421  
ZIONSVILLE, INDIANA

RAMBOLL

FIGURE  
**6**

## APPENDIX A

### Borehole Logs

TR0485D

September 2020



Ramboll  
One Indiana Square  
Suite 2335  
Indianapolis, IN  
46204

BORING NUMBER: **PSGS-1**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

**PROJECT NUMBER** 1690016317

**DATE STARTED** 7/20/20 **COMPLETED** 7/21/20

**DRILLING CONTRACTOR** Stock Drilling

**DRILLER** Ryan Brown

**DRILLING EQUIPMENT**

**DRILLING METHOD** Rotosonic (mini)

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

**LOGGED BY** Vitaliy Morozov      **CHECKED BY** Charles Goodwin

**GROUND ELEVATION** 878.66 ft

**CHECKED BY** Charles Goodwin

NORTHING 1741447.6

**EASTING** 3178429.0

**TOTAL BORING DEPTH** 46 ft bgs

**SIZE** 8 in.

**SAMPLING METHOD** Core Barrel

---

10

SAMPLE DESCRIPTION					
DEPTH (ft bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG
0					
1	1.0				
2		1		PSGS-1 3'	1.0 POROUS CONCRETE
3		1.3			2.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft, 10% sand, 5% gravel
4		4.5			(SW) SAND 10YR 6/3, well graded, fine to coarse grained, dry, loose
5		1		PSGS-1 6'	
6		0.7			10YR 5/3
7		3.8			
8		2.7			
9		0.6			
10		0.5			
11		0.7			
12		1.5			
13		1.8		PSGS-1 13'	
14		2.4			
15		1			15.0
16		2.3			
17		14.7			16.0 (CL-ML) SILTY CLAY with SAND 10YR 5/1, wet, low plasticity, soft, 5% gravel
18		7.8			(SC) CLAYEY SAND 10YR 5/1, well graded, medium to coarse grained, wet to saturated,
19		10.1		PSGS-1 19'	loose
20		19			10YR 5/2, wet
21		8.8			(CL-ML) SILTY CLAY 10YR 5/1, moist, soft, 5% sand and gravel
22		2			3' 10YR 5/1, moist, soft, silt seam from 18 to 18.25'
23		2			non-plastic, stiff, 10% sand and gravel
24		1.4			
25		1.9		PSGS-1 25'	
26		5			23.5
27		2.2			
28		4.2			(SP) SAND 10YR 6/1, poorly graded, fine grained, moist, loose, 5% fines
29		4.9			(SW) well graded, medium to coarse grained, wet, loose, 10% gravel
30		2.3			
31		2		PSGS-1 28'	(SC) CLAYEY SAND 10YR 4/2, well graded, fine to coarse grained, wet, loose, 10% gravel,
32		2.3			some cobbles
33		6.4			
34		2.7		PSGS-1 32'	31.5 10YR 4/1, saturated, 15% gravel, brown mottling
35		5.9			
36		2.7			(CL-ML) SILTY CLAY 10YR 5/1, dry to moist, non-plastic, stiff, 10% sand and gravel, orangish
37		1.1			brown mottling
38		1.1			
39		1.2		PSGS-1 39'	10YR 4/1, dry, 5% sand and gravel
40		1.4			
41		2.5			
42		1.7			
43		1		PSGS-1 43'	soils are hot from 35 to 46' due to thermal remediation
44		1.1			
45		2.1			
46		1.1		PSGS-1 46'	
		0.8			Attempted to collect groundwater sample, insufficient water present after
		0.6			3 hours, boring abandoned with bentonite grout seal.
					Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-2**

PAGE 1 OF 1

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 7/22/20 COMPLETED 7/23/20

DRILLING CONTRACTOR Stock Drilling

DRILLING EQUIPMENT Terrasonic

DRILLER Ryan Brown

DRILLING METHOD Rotosonic (mini)

SAMPLING METHOD Core Barrel

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Vitaliy Morozov CHECKED BY Charles Goodwin

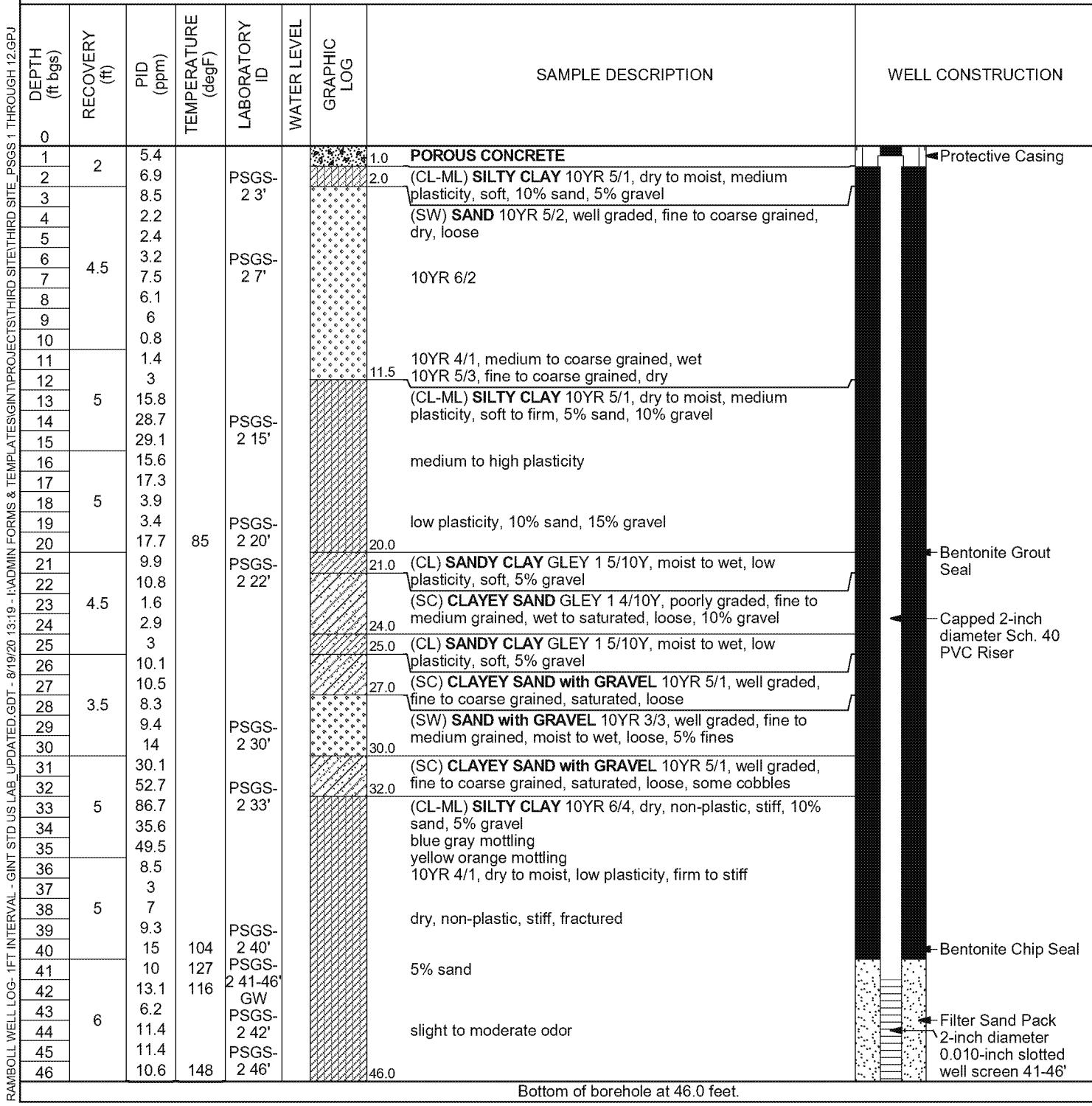
GROUND ELEVATION 878.83 ft TOC ELEVATION 878.63 ft

NORTHING 1741446.7 EASTING 3178442.2

TOTAL BORING DEPTH 46 ft bgs BOREHOLE SIZE 8 in

TOTAL WELL DEPTH 46 ft bgs SCREEN INTERVAL 41-46 ft

GROUNDWATER LEVEL 24.31' below TOC on 8/14/2020





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BORING NUMBER: **PSGS-3**

PAGE 1 OF 1

CLIENT	Third Site Trustees					PROJECT NAME	Third Site		
PROJECT NUMBER	1690016317					PROJECT LOCATION	Zionsville, IN		
DATE STARTED	8/3/20	COMPLETED	8/4/20			LOGGED BY	Vitaliy Morozov	CHECKED BY	Charles Goodwin
DRILLING CONTRACTOR	Stock Drilling					GROUND ELEVATION	878.36 ft		
DRILLER	Ryan Brown					NORTHING	1741460.3		
DRILLING EQUIPMENT	Terrasonic					TOTAL BORING DEPTH	46 ft bgs		
DRILLING METHOD	Rotosonic (mini)					SAMPLING METHOD	Core Barrel		

RAMBOLL BASIC BORING LOG (1 FT INTERVAL) - GINT STD US LAB UPDATED:GDT - 8/19/20 17:53 - C:\USERS\VMOROZOV\DESKTOP\SOIL BORING LOGS\THIRD SITE\PSGS 1 THROUGH 12.GPJ

DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION		
						1.0	2.0	3.0
0								
1	2.0					1.0 POROUS CONCRETE		
2						2.0 (CL-ML) SILTY CLAY 10YR 4/3, dry to moist, low plasticity, soft, 10% sand and gravel		
3		0.2				(SW) SAND 10YR 5/3, well graded, fine to coarse grained, dry to moist, loose		
4	3.0	0.4				dry		
5		0.5						
6		1.2						
7		2.3						
8	5.0	0.7						
9		2.7						
10		3.2	87	PSGS-3 5'				
11		100						
12								
13	4.0	1				13.0 10YR 4/4, moist to wet		
14		1.2				(SM) SILTY SAND 10YR 5/4, well graded, fine to coarse grained, moist, loose, 5% gravel		
15		1.9				15.0		
16		2.5				(CL-ML) SILTY CLAY GLEY 5/N, dry to moist, low plasticity, soft to firm, 5% sand, 10% gravel		
17		2.1						
18	5.0	3.8						
19		1.9						
20		0.4						
21		13.11						
22		0.5						
23	5.0	0.9				22.0		
24		1				23.0 (SM) SILTY SAND GLEY 5/N, poorly graded, fine to medium grained, moist, loose, 5% gravel		
25		1.2	84	PSGS-3 15'		24.0 (CL-ML) SILTY CLAY GLEY 5/N, dry to moist, low plasticity, soft to firm, 5% sand, 10% gravel		
26		96				25.0 (SW) GRAVELLY SAND 10YR 5/1, well graded, fine to coarse grained, moist to wet, loose, 10% fines		
27						10% fines		
28	1.0	15.9				27.0 (SC) CLAYEY SAND 10YR 4/1, poorly graded, fine grained, moist, loose		
29		21.7				well graded		
30		46.8				(SW) SAND 10YR 3/2, well graded, fine to coarse grained, moist, loose, some cobbles		
31		19				30.0 10YR 4/1, poorly graded, fine grained, dry, 5% gravel		
32		25.5				31.0 (SC) CLAYEY SAND with GRAVEL 10YR 4/1, well graded, wet, loose, some cobbles		
33	2.5	14.9				(CL-ML) SILTY CLAY 10YR 6/2, dry to moist, non-plastic, stiff, 10% sand, 5% gravel		
34		12						
35		33.2						
36		19.6						
37		8.9						
38	5.0	1.8				GLEY 1 5/N, low plasticity, soft to firm, 5% sand		
39		0.8						
40		0.6						
41		1				firm to stiff		
42		1.6						
43	6.0	5	114	PSGS-3 41-46 GW		10YR 4/1, dry, dense, 5% gravel		
44		6.1						
45		6.8						
46		9.5						
		7.2						
		5	130	PSGS-3 46'		Collected grab groundwater sample PSGS-3 41-46' on 8/4/2020, boring abandoned with bentonite grout seal.		
						Bottom of borehole at 46.0 feet.		



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BORING NUMBER: **PSGS-4**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

PROJECT NUMBER 1690016317

**DATE STARTED** 8/4/20 **COMPLETED** 8/4/20

**DRILLING CONTRACTOR** Stock Drilling

**DRILLING EQUIPMENT** Terrasonic

DRILLER Ryan Brown

**DRILLING METHOD** Rotosonic (mini)

**SAMPLING METHOD**

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

LOGGED BY Amanda Dragos

**CHECKED BY** Charles Goodwin

**GROUND ELEVATION** 878.16 ft

**TOC ELEVATION** 878.01 ft

NORTHING 1741462 5

FASTING 3178458.3

**TOTAL BORING DEPTH** 46 ft bgs

**BOREHOLE SIZE** 8 in.

**TOTAL WELL DEPTH** 46 ft bgs

**SCREEN INTERVAL** 41-46 ft

**GROUNDWATER LEVEL** 18.59' below TOC on 8/14/2020

Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-5**

PAGE 1 OF 1

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 7/24/20 COMPLETED 7/24/20

DRILLING CONTRACTOR Stock Drilling

DRILLER Ryan Brown

DRILLING EQUIPMENT Terrasonic

DRILLING METHOD Rotosonic (mini)

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Vitaliy Morozov CHECKED BY Charles Goodwin

GROUND ELEVATION 878.91 ft

NORTHING 1741443.7 EASTING 3178451.9

TOTAL BORING DEPTH 46 ft bgs

SIZE 8 in.

SAMPLING METHOD Core Barrel

DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION	
						Sample Description	Notes
0							
1	2.0					1.0 POROUS CONCRETE	
2						2.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft, 10% sand, 5% gravel	
3		0.9		PSGS-5 4'		(SW) SAND 10YR 6/3, well graded, fine to coarse grained, dry, loose	
4		2.2					
5		1.9					
6	5.3	4.6					
7		2.6					
8		3.1					
9		10.6		PSGS-5 10'			
10		14.4					
11		7.6				1.0 POROUS CONCRETE	
12		69.6				2.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft, 10% sand, 5% gravel	
13		93.7		PSGS-5 13'		(SW) SAND 10YR 6/3, well graded, fine to coarse grained, dry, loose	
14		57.7					
15		38.4					
16		26.5		PSGS-5 17'			
17		41.1				1.0 POROUS CONCRETE	
18		37.2				2.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft, 10% sand, 5% gravel	
19		28.9				(SW) SAND 10YR 6/3, well graded, fine to coarse grained, dry, loose	
20		22					
21		7.1					
22		9.1					
23	5.0	15.4		PSGS-5 23'			
24		7.4				1.0 POROUS CONCRETE	
25		2				2.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft, 10% sand, 5% gravel	
26		6.3				(SW) SAND 10YR 6/3, well graded, fine to coarse grained, dry, loose	
27	2.5	3.5					
28		3.5					
29		1.3		PSGS-5 30'			
30		15.6				1.0 POROUS CONCRETE	
31		38.6				2.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft, 10% sand, 5% gravel	
32		41.2		PSGS-5 32'		(SW) SAND 10YR 6/3, well graded, fine to coarse grained, dry, loose	
33		3.4					
34		14.2					
35		31.2	117				
36		0.4					
37		9.6					
38	5.0	4.6					
39		9.3					
40		42.2					
41		10.4		PSGS-5 40'			
42		27.8				1.0 POROUS CONCRETE	
43		72.7		PSGS-5 41-46'		2.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft, 10% sand, 5% gravel	
44		524.4		GW		(SW) SAND 10YR 6/3, well graded, fine to coarse grained, dry, loose	
45		132.8		PSGS-5 44'			
46		18.8	165	PSGS-5 46'			
						Collected grab groundwater sample PSGS-5 41-46' on 7/24/2020, boring abandoned with bentonite grout seal.	
							Bottom of borehole at 46.0 feet.

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 8/6/20 COMPLETED 8/6/20

DRILLING CONTRACTOR Stock Drilling

DRILLER Ryan Brown

DRILLING EQUIPMENT Terrasonic

DRILLING METHOD Rotosonic (mini)

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Vitaliy Morozov CHECKED BY Charles Goodwin

GROUND ELEVATION 878.73 ft

NORTHING 1741455.1

EASTING 3178469.2

TOTAL BORING DEPTH 46 ft bgs

SIZE 8 in.

SAMPLING METHOD Core Barrel

DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION
0						
1	2.0					1.0 POROUS CONCRETE
2						2.0 (CL-ML) SILTY CLAY 10YR 5/3, dry to moist, low plasticity, soft, 10% sand, 5% gravel
3		1.9				(SW) SAND 10YR 6/2, well graded, fine to coarse grained, dry, loose, 5% fines, 5% gravel
4	3.0	1.5				
5		2.8	90	PSGS- 6 5'		5.5
6		0.7				(CL) SANDY CLAY 10YR 5/1, dry to moist, medium plasticity, soft to firm, 10% gravel
7		0.3				
8		5.2				
9		4.3				
10		14.3	101	PSGS- 6 10'		10.0
11		7				(CL-ML) SILTY CLAY 10YR 5/1, dry to moist, low plasticity, firm, 15% sand, 10% gravel
12		6.4				2" clayey sand lense, well graded, fine to coarse grained, moist to wet
13	5.0	7.4				
14		9.2				
15		22	82	PSGS- 6 15' PSGS- 6 16'		
16		8.7				
17		2.4				
18	5.0	5.2				17.8 3" clayey sand lense, poorly graded, fine grained, moist to wet
19		3				(SP-SC) CLAYEY SAND 10YR 5/2, poorly graded, fine to medium grained, moist to wet, loose, 5% gravel
20		1.6				(CL-ML) SILTY CLAY 10YR 5/1, dry to moist, low plasticity, firm, 15% sand, 10% gravel
21		2.9				(SW-SC) CLAYEY SAND 10YR 6/2, well graded, fine to medium grained, wet, loose, 10% gravel
22		3.5				some cobbles
23	4.0	5.1				
24		5.6				
25		5	86	PSGS- 6 24'		25.0
26		1.9				(SW) SAND 10YR 6/2, well graded, medium to coarse grained, wet to saturated, loose, 10% clay, 15% gravel, some cobbles
27		2.9				
28	4.0	26.4				
29		47.4				10YR 5/2, fine to coarse grained, wet, 5% clay, 5% gravel
30		76.6	87	PSGS- 6 30'		30.0
31		27.3				(SW-SC) CLAYEY SAND 10YR 4/1, well graded, fine to coarse grained, wet to saturated, loose, 5% gravel
32		30.7				
33	5.0	294.3				
34		382.2				
35		231.3	96	PSGS- 6 34' PSGS- 6 36'		(CL-ML) SILTY CLAY 10YR 5/2, dry to moist, non-plastic, firm to stiff, 5% sand, 5% gravel
36		24				
37		11.8				10YR 5/1, moist, high plasticity, soft, 15% sand
38	5.0	4				
39		7.3				
40		1.4	103			10YR 4/1, dry, non-plastic, stiff, 5% sand
41		15.7				
42		13.4				
43		7.6				
44		21.7				
45		17.2				
46		16.7	148	PSGS- 6 44' PSGS- 6 46'		46.0 Attempted to collect groundwater sample, insufficient water present after 3 hours, boring abandoned with bentonite grout seal.

Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-7**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 7/27/20 COMPLETED 7/28/20

**DRILLING CONTRACTOR** Stock Drilling

**DRILLING EQUIPMENT** Terrasonic

DRILLER Ryan Brown

**DRILLING METHOD** Rotosonic (mini)

**SAMPLING METHOD**

 Core Barrels

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

LOGGED BY Amanda Dragos

**CHECKED BY** Charles Goodwin

**GROUND ELEVATION** 878.63 ft

**TOC ELEVATION** 878.34 ft

NORTHING 1741442.9

EASTING 3178464.0

**TOTAL BORING DEPTH** 46 ft bgs

**BOREHOLE SIZE** 8 in.

**TOTAL WELL DEPTH** 46 ft bgs

SCREEN INTERVAL 4

**GROUNDWATER LEVEL** 11.87' below TOC on 8/14/2020

SAMPLE DESCRIPTION							WELL CONSTRUCTION
DEPTH (ft bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	WATER LEVEL	GRAPHIC LOG	
0							
1	2						
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33	2.5						
34							
35							
36							
37							
38	5						
39							
40							
41							
42							
43	6						
44							
45							
46							

Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-8**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

PROJECT NUMBER 1690016317

**DATE STARTED** 7/28/20 **COMPLETED** 7/29/20

**DRILLING CONTRACTOR** Stock Drilling

DRILLER Ryan Brown

**BILLING EQUIPMENT** Terrasonic

**BILLING METHOD** Rotosonic (mini)

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

**LOGGED BY** Amanda Dragos      **CHECKED BY** Charles Goodwin

**GROUND ELEVATION** 878.81 ft

NORTHING 1741443.3

**TOTAL BORING DEPTH** 46 ft bas **SIZE** 8 in.

**SAMPLING METHOD**

**SAMPLING METHOD** Core Barrel

## **SAMPLING METHOD**

DEPTH (ft bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION	
						TESTS	RESULTS
0							
1		2.0	0.3			1.0	POROUS CONCRETE
2			0.7				(SW) GRAVELLY SAND 10YR 4/1, well graded, fine to coarse grained, dry, non-plastic, loose, some rock and concrete fragments
3			13				
4			32.1				
5			43				
6			19.8				
7			56.5				
8			19.1				
9			24.9				
10			13				
11			0.1				
12			1.1				
13			25				
14			37.4				
15			26.9				
16			35.4				
17			25.1				
18			20.4				
19			10.2				
20			22.9				
21			24.6				
22			9.7				
23			13				
24			9.1				
25			16.1				
26			7.3				
27			7.2				
28			7.7				
29			9.7				
30			7.4				
31			27.8				
32			22				
33			39				
34			56				
35			127.2				
36			118				
37			124				
38							
39							
40							
41							
42							
43							
44							
45							
46							

Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-9**

PAGE 1 OF 1

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 8/7/20 COMPLETED 8/7/20

DRILLING CONTRACTOR Stock Drilling

DRILLER Ryan Brown

DRILLING EQUIPMENT Terrasonic

DRILLING METHOD Rotosonic (mini)

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Vitaliy Morozov CHECKED BY Charles Goodwin

GROUND ELEVATION 878.67 ft

NORTHING 1741456.7

EASTING 3178475.7

TOTAL BORING DEPTH 46 ft bgs

SIZE 8 in.

SAMPLING METHOD Core Barrel

DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION	
						Sample Description	Notes
0							
1	2.0					1.0 POROUS CONCRETE	
2						2.0 (CL-ML) SILTY CLAY 10YR 5/3, dry to moist, low plasticity, soft, 10% sand, 5% gravel	
3		0.9				3.0 (SW) SAND 10YR 4/4, well graded, fine to coarse grained, moist, loose, 5% gravel	
4	2.7	5.9		98		3.5 (CL) SANDY CLAY 10YR 5/2, dry to moist, non-plastic, soft to firm, 10% gravel	
5		11.3				4.0 (SW-SC) CLAYEY SAND 10YR 5/2, well graded, fine to coarse grained, moist to wet, loose, 5% gravel	
6		2.1				(CL) SANDY CLAY 10YR 5/1, dry to moist, low plasticity, soft to firm, 10% gravel	
7		6.1					
8	5.0	6.3		95		(CL-ML) SILTY CLAY 10YR 5/1, dry to moist, medium plasticity, soft to firm, 5% sand, 10% gravel	
9		9.2					
10		7.9					
11		1.3					
12		2.4					
13	5.0	1.5		83			
14		1.2				(CL) SANDY CLAY 10YR 5/2, moist, low plasticity, soft to firm, 5% gravel	
15		1.7				15.0	
16		0.9				(SP-SC) CLAYEY SAND 10YR 5/3, poorly graded, fine to medium grained, moist to wet, loose, 5% gravel	
17		1.9					
18		1.9					
19		1.6					
20		1.1				wet to saturated	
21		1					
22		0.5				22.0	
23	4.0	1.3		PSGS-9 24'		(SW) SAND 10YR 6/2, well graded, fine to coarse grained, moist, loose, 5% clay, 15% gravel, some cobbles	
24		1.3				25.0	
25		0.9				(GW) SANDY GRAVEL 10YR 6/3, well graded, fine to medium grained, wet to saturated, loose, 5% clay, some cobbles	
26		2.2				27.0	
27		0.7				(SW) SAND 10YR 4/3, well graded, fine to coarse grained, moist to wet, loose, 10% clay, 10% gravel	
28	3.8	3.5		PSGS-9 30'		30.0	
29		6.7				31.0 (SW-SC) CLAYEY SAND 10YR 4/1, well graded, fine to coarse grained, saturated, loose, 10% gravel, some cobbles	
30		7				32.5 (CL) SANDY CLAY 10YR 5/1, dry to moist, non-plastic, firm to stiff, 10% gravel	
31		10.9				(CL-ML) SILTY CLAY 10YR 4/1, dry to moist, non-plastic, firm to stiff, 5% sand, 5% gravel, orangish brown mottling	
32		20.1					
33		19.5					
34		21.8					
35		9.2					
36		4.1					
37		4.9					
38	5.0	1.1		PSGS-9 37'		dry, stiff	
39		1				38.5	
40		1.6				39.5 (SW-SC) CLAYEY SAND 10YR 5/1, well graded, fine to medium grained, saturated, loose, 10% gravel	
41		7.7				(CL-ML) SILTY CLAY 10YR 3/1, dry, non-plastic, stiff, 5% sand, 5% gravel	
42		12.4					
43		9.2					
44		7					
45		8.8					
46		6.3		PSGS-9 46'		46.0	Collected grab groundwater sample PSGS-9 41-46' on 8/7/2020, boring abandoned with bentonite grout seal.
							Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-10**

PAGE 1 OF 1

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 8/12/20 COMPLETED 8/12/20

DRILLING CONTRACTOR Stock Drilling

DRILLING EQUIPMENT Terrasonic

DRILLER Ryan Brown

DRILLING METHOD Rotosonic (mini)

SAMPLING METHOD Core Barrel

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Amanda Dragos CHECKED BY Charles Goodwin

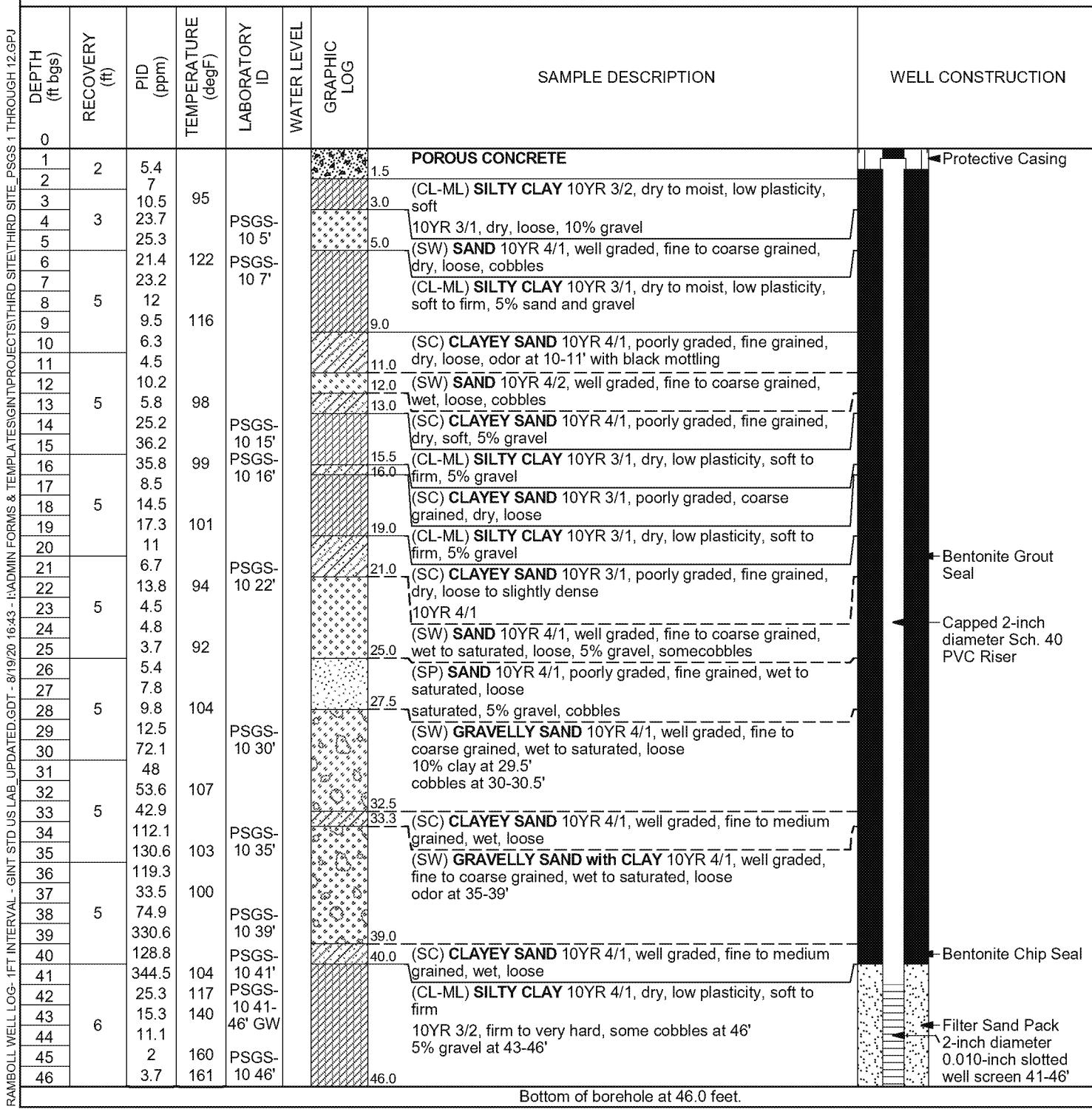
GROUND ELEVATION 878.50 ft TOC ELEVATION 878.21 ft

NORTHING 1741451.0 EASTING 3178486.4

TOTAL BORING DEPTH 46 ft bgs BOREHOLE SIZE 8 in

TOTAL WELL DEPTH 46 ft bgs SCREEN INTERVAL 41-46 ft

GROUNDWATER LEVEL 12.85' below TOC on 8/14/2020





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BORING NUMBER: **PSGS-11**

PAGE 1 OF 1

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 7/30/20 COMPLETED 7/30/20

DRILLING CONTRACTOR Stock Drilling

DRILLER Ryan Brown

DRILLING EQUIPMENT Terrasonic

DRILLING METHOD Rotosonic (mini)

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Amanda Dragos CHECKED BY Charles Goodwin

GROUND ELEVATION 878.52 ft

NORTHING 1741436.4 EASTING 3178475.2

TOTAL BORING DEPTH 46 ft bgs

SIZE 8 in.

SAMPLING METHOD Core Barrel

DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION	
						TESTS	RESULTS
0							
1	2.0					1.5	POROUS CONCRETE
2						3.5	FILL MATERIAL 10YR 3/2, fine to coarse grained, moist, non-plastic, loose to soft, some cobbles
3		4		PSGS-11 5'		5.0	(CL-ML) SILTY CLAY 10YR 3/1, dry, low plasticity, firm, 5% gravel
4	3.0	50.2		112		6.0	(SC) CLAYEY SAND with GRAVEL 10YR 3/1, fine to coarse grained, moist, low plasticity, soft
5		184.9		PSGS-11 7'		8.8	(CL-ML) SILTY CLAY 10YR 3/1, dry, low plasticity, firm
6		29.6				10.0	GLEY 1 2.5/N, medium plasticity
7		38				11.0	soft, fine to medium grained sand
8		34.7					
9		3.9					
10		7.7					
11		13.7					
12		5.3		PSGS-11 11 3'			
13		43.9					
14		26.3					
15		32.9					
16		16.6		PSGS-11 11 7'			
17		22.8					
18	5.0	13.9				18.0	
19		9.9					
20		20.5					
21		4.8				21.0	
22		2.6					
23	5.0	7.9		87			
24		7.3					
25		8.1					
26		8.5					
27		6.5					
28	5.0	27.8		PSGS-11 25'		28.0	
29		40.5					
30		59.7					
31		80.3					
32		130		PSGS-11 32'		31.0	
33	5.0	129.4					
34		82.5					
35		42.8					
36		29.2					
37		18.4					
38	5.0	20.6		PSGS-11 40'		40.0	
39		2.3					
40		36.6					
41		7.8		PSGS-11 41-		40.5	
42		513.8		46' GW		42.0	(SC) CLAYEY SAND 10YR 4/1, poorly graded, fine grained, moist, loose
43		647.9					(ML) CLAYEY SILT 10YR 4/1, dry, non-plastic, soft
44		15000		126			
45		15000		124		43.8	(CL-ML) SILTY CLAY 10YR 4/1, dry, low plasticity, firm, 5% sand
46		129.6	98	1144'		44.8	10YR 2/1, medium plasticity, firm to very hard, slight odor/sheen
				1146'		46.0	(SC) CLAYEY SAND 10YR 3/1, poorly graded, fine grained, moist to wet, loose to medium dense, 10% gravel, very strong odor, slight sheen
							(CL-ML) SILTY CLAY 10YR 2/1, dry, medium plasticity, firm to very hard, slight odor low plasticity
							Bottom of borehole at 46.0 feet.

Collected grab groundwater sample PSGS-11  
41-46' on 7/30/2020, boring abandoned with  
bentonite grout seal.



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BORING NUMBER: **PSGS-12**

PAGE 1 OF 1

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 7/31/20 COMPLETED 7/31/20

DRILLING CONTRACTOR Stock Drilling

DRILLING EQUIPMENT Terrasonic

DRILLER Ryan Brown

DRILLING METHOD Rotosonic (mini)

SAMPLING METHOD Core Barrel

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Amanda Dragos CHECKED BY Charles Goodwin

GROUND ELEVATION 878.47 ft TOC ELEVATION 878.03 ft

NORTHING 1741434.1 EASTING 3178491.1

TOTAL BORING DEPTH 46 ft bgs BOREHOLE SIZE 8 in

TOTAL WELL DEPTH 46 ft bgs SCREEN INTERVAL 41-46 ft

GROUNDWATER LEVEL 20.40' below TOC on 8/14/2020

DEPTH (ft bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	WATER LEVEL	GRAPHIC LOG	SAMPLE DESCRIPTION	WELL CONSTRUCTION
0								
1	2							
2								
3		2.9	87					
4		2.5		PSGS- 12 5'				
5		3		PSGS- 12 6'				
6		8.8	111					
7		7.7						
8		1.5						
9		3.8						
10		8						
11		0.7		PSGS- 12 12'				
12		6						
13		3.6						
14		0.8						
15		0.1	97	PSGS- 12 16'				
16		2.7						
17		1.5						
18	5	2	92					
19		1						
20		2.2						
21		1.7						
22		1.6						
23	5	2.5		PSGS- 12 25'				
24		1						
25		2.6	88					
26		1.3						
27		2						
28	5	1.1						
29		5.3		PSGS- 12 30'				
30		6.5	88					
31		10.3		PSGS- 12 31'				
32		7.8						
33		7.7						
34		7.9						
35		5.2						
36		2.4						
37		3.8						
38	5	2.8	94	PSGS- 12 37'				
39		3.3						
40		3.7						
41		3.2						
42		2.9						
43	6	12.3		PSGS- 12 43'				
44		7.1						
45		6.9						
46		3.6		PSGS- 12 46'				

Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-13**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

**PROJECT NUMBER** 1690016317

**DATE STARTED** 8/13/20 **COMPLETED** 8/13/20

**DRILLING CONTRACTOR** Stock Drilling

**DRILLER** Ryan Brown

**DRILLING EQUIPMENT** Terrasonic

**DRILLING METHOD** Rotosonic (mini)

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

**LOGGED BY** Amanda Dragos **CHECKED BY** Charles Goodwin

**GROUND ELEVATION** 878.66 ft

**NORTHING** 1741458.3 **EASTING** 3178491.3

**TOTAL BORING DEPTH** 46 ft bgs **SIZE** 8 in.

**SAMPLING METHOD** Core Barrel

DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION	
						Sample Description	Notes
0							
1	2.0	1.4				1.5 POROUS CONCRETE	
2		2.1					
3		5.4	78	PSGS-13 4'		(SC) CLAYEY SAND 10YR 4/1, poorly graded, fine grained, dry to moist, soft, 5% gravel	
4	3.0	7.3	96				
5		5.6				5.0	
6		13.8				(CL-ML) SILTY CLAY 10YR 3/1, moist, low plasticity, soft to firm, 10% gravel, grey mottling	
7		15.7	112	PSGS-13 7'			
8		15.4				8.5	
9		2.7	102			9.5 (SC) CLAYEY SAND 10YR 4/1, poorly graded, fine grained, dry to moist, soft	
10		3.1	85			10.0 (SW) SAND 10YR 5/1, fine to medium grained, dry, loose, 5% gravel	
11		0.7				(CL-ML) SILTY CLAY 10YR 3/1, moist, low plasticity, soft to firm	
12		11.5	93	PSGS-13 14'		5% gravel 11-11.5'	
13		14.6					
14		18.5				15.0	
15		9	91			15.3 (SC) CLAYEY SAND 10YR 4/1, poorly graded, fine grained, moist, loose	
16		20.1	PSGS-13 17'			16.5 (CL-ML) SILTY CLAY 10YR 4/1, moist, low plasticity, soft to firm, 5% gravel	
17		22.6				(SC) CLAYEY SAND 10YR 4/1, poorly graded, fine grained, dry to moist, loose	
18		9.9	88				
19		13.5				20.0 cobbles at 19'	
20		14				(SW) SAND 10YR 3/1, well graded, fine to coarse grained, moist, loose	
21		1.1				wet to saturated	
22		1.8				5% clay	
23	5.0	1.1		PSGS-13 25'		24.0 (SP) SAND 10YR 4/1, poorly graded, fine grained, moist, loose, cobbles	
24		1.9				26.0 (SW) SAND 10YR 4/1, well graded, fine to coarse grained, moist, loose, cobbles	
25		2.1	78				
26		0.6				30.0 (CL-ML) SILTY CLAY 10YR 4/2, 5% fine grained sand, moist, low plasticity, firm	
27		1.9	82	PSGS-12 30'		31.0 (SC) CLAYEY SAND 10YR 4/2, well graded, fine to coarse grained, wet to saturated, soft, large cobbles	
28		4.2		PSGS-13 31'		(CL-ML) SILTY CLAY 10YR 4/2, 5% fine grained sand, moist, low plasticity, firm	
29		4.3	104			10YR 4/1, dry, firm to very hard, grey mottling, 5% gravel	
30		7.3				10YR 3/1	
31		8.2	PSGS-13 39'			37.0 (SW) GRAVELLY SAND with CLAY 10YR 4/1, well graded, fine to coarse grained, wet, loose, cobbles	
32		0.5				(CL-ML) SILTY CLAY 10YR 4/1, 5% fine grained sand, dry, low plasticity, firm	
33		7.1				10YR 2/1, 5% sand, firm to very hard, slight odor	
34		4.8				5% gravel	
35		1.3					
36		0.7	110	PSGS-13 43'		Attempted to collect groundwater sample, insufficient water present after	
37		3.9				3 hours, boring abandoned with bentonite grout seal.	
38		13.8					
39		51.9					
40		36.1					
41		20.8					
42		26.2	146				
43		26.8	149				
44		19.8	166				
45		9.3					
46		10.5	151	PSGS-13 46'			
							Bottom of borehole at 46.0 feet.

**RAMBOLL**

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BORING NUMBER: **PSGS-14**

PAGE 1 OF 1

CLIENT Third Site Trustees

PROJECT NUMBER 1690016317

DATE STARTED 8/5/20 COMPLETED 8/5/20

DRILLING CONTRACTOR Stock Drilling

DRILLER Ryan Brown

DRILLING EQUIPMENT Terrasonic

DRILLING METHOD Rotosonic (mini)

PROJECT NAME Third Site

PROJECT LOCATION Zionsville, IN

LOGGED BY Vitaliy Morozov CHECKED BY Charles Goodwin

GROUND ELEVATION 878.64 ft

NORTHING 1741463.4

EASTING 3178470.1

TOTAL BORING DEPTH 46 ft bgs

SIZE 8 in.

SAMPLING METHOD Core Barrel

RAMBOLL BASIC BORING LOG (1 FT INTERVAL) - GINT STD US LAB UPDATED:GDT - 8/19/2012:13 - C:\USERS\VMOROZOVI\Desktop\SOIL BORING LOGS\THIRD SITE PSGS - PSGS-6-9-14.GPJ

DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION
0						
1	2.0					1.0 POROUS CONCRETE
2						2.0 (CL-ML) SILTY CLAY 10YR 5/3, dry to moist, low plasticity, soft, 10% sand, 5% gravel
3		0				(SP) SAND 10YR 7/1, poorly graded, coarse grained, dry, loose, 5% fines, with plastic debris
4	3.0	0.2		PSGS-14 5'		3.5 (SW) SAND 10YR 6/2, well graded, fine to coarse grained, dry, loose, 15% fines, 5% gravel
5		0.3				5.0 (SP) SAND 10YR 7/1, poorly graded, coarse grained, dry, loose, 5% fines, with plastic debris
6		0.1				(SP) SAND 10YR 7/1, poorly graded, coarse grained, dry, loose, 5% fines, with plastic debris
7		0.2				
8	3.0	1.6		PSGS-14 10'		8.0 (SW) SAND 10YR 6/2, well graded, fine to coarse grained, dry, loose, 15% fines, 5% gravel
9		1.7				
10		2.2	104			10.0 (CL-ML) SILTY CLAY 10YR 5/1, dry to moist, low plasticity, soft to firm, 15% sand, 10% gravel
11		0.3				
12		0.2				
13	5.0	2.6		PSGS-14 15'		
14		2.1		PSGS-14 16'		
15		5.3	89			
16		5.6				
17		2.7				
18	5.0	4.2		PSGS-14 22'		1" sand lense, poorly graded, fine to medium grained, wet
19		1.5				3" clayey sand lense, poorly graded, fine grained, moist to wet
20		1.8	97			3" clayey sand lense, poorly graded, fine grained, moist to wet
21		0.9				
22		1.7				
23	4.8	0.7		PSGS-14 26'		3" clayey sand lense, poorly graded, fine grained, moist to wet
24		1.6				23.0 1" sand lense, poorly graded, fine to medium grained, wet
25		1.2				1" sand lense, poorly graded, fine to medium grained, wet
26		5.6				
27		3.4				(SW-SC) CLAYEY SAND 10YR 5/2, well graded, fine to coarse grained, wet, loose, 10% gravel
28	5.0	3				(SW) SAND 10YR 4/3, well graded, fine to coarse grained, wet, loose, 5% clay, 10% gravel
29		4.4				
30		2.5	87	PSGS-14 32'		
31		5.7				10YR 4/2, 15% gravel
32		16.7				10YR 4/1, fine to medium grained, saturated, 5% gravel
33	5.0	5.8				32.0 15% clay, fine to coarse grained
34		12.8				
35		6.7	97			(SW-SC) CLAYEY SAND 10YR 5/1, well graded, fine to coarse grained, saturated, loose, 15% gravel
36		1.7				(CL-ML) SILTY CLAY GLEY1 4/10Y, dry to moist, non-plastic, firm to stiff, 10% sand, 5% gravel, orangish brown mottling
37		1.3				GYLEY1 5/N, saturated, medium plasticity, soft, 15% gravel
38	5.0	1.6		PSGS-14 40'		GYLEY1 6/N, moist, low plasticity, firm, 10% gravel
39		3.3		PSGS-14 41-		
40		4	103	46 GW		10YR 4/1, dry, non-plastic, stiff, 5% sand, 5% gravel
41		5.5				
42		7.4				
43		2.8				
44		7.6		PSGS-14 45'		
45		8.1		PSGS-14 46'		
46		7.1	137			Collected grab groundwater sample PSGS-14 41-46' on 8/5/2020, boring abandoned with bentonite grout seal.
						Bottom of borehole at 46.0 feet.



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BORING NUMBER: **PSGS-15**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

PROJECT NUMBER 1690016317

**DATE STARTED** 8/10/20 **COMPLETED** 8/10/20

**DRILLING CONTRACTOR** Stock Drilling

**DRILLER** Ryan Brown

**DRILLING EQUIPMENT** Terrasonic

**DRILLING METHOD** Rotosonic (mini)

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

**LOGGED BY** Amanda Dragos      **CHECKED BY** Charles Goodwin

**GROUND ELEVATION** 878.68 ft

**NORTHING** 1741434.8      **EASTING** 3178464.6

**TOTAL BORING DEPTH** 46 ft bgs      **SIZE** 8 in.

**SAMPLING METHOD** Core Barrel

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SAMPLE DESCRIPTION					
DEPTH (ft bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG
0					
1	2.0	0.1			
2		0.2			
3		7.4	90		
4		14.9	96	PSGS-15 5'	
5		17.9			
6		1.4			
7		3.7	103		
8		6.4			
9		6.5			
10		5.8	116		
11		7.2			
12		9.7	90	PSGS-15 12'	
13		4.1			
14		2.6			
15		1.9	97		
16		2.9			
17		1.5			
18		3.5	93		
19		4.1			
20		4.6			
21		3	92	PSGS-15 20'	
22		3.6			
23		3.6			
24		1.3			
25		3.9	92		
26		1.9	95		
27		1.1			
28		4.7			
29		5.9			
30		8.4	98	PSGS-15 25'	
31		4.1	98		
32		4.3			
33		6.9			
34		1	105	PSGS-15 33'	
35		6.8			
36		1.4	100		
37		4.6			
38		7.7	110	PSGS-15 40'	
39		10.5			
40		14	117	PSGS-15 41-46' GW	
41		9.6			
42		9.8			
43		13.6			
44		15.2			
45		12.9			
46		14.6			
		24	118	PSGS-15 45'	
		81.3		PSGS-15 46'	
		348.7			



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BORING NUMBER: **PSGS-16**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

**PROJECT NUMBER** 1690016317

**DATE STARTED** 8/11/20 **COMPLETED** 8/11/20

**DRILLING CONTRACTOR** Stock Drilling

**DRILLING EQUIPMENT** Terrasonic

**DRILLER** Ryan Brown

**DRILLING METHOD** Rotosonic (mini)

**SAMPLING METHOD** Core Barrel

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

**LOGGED BY** Amanda Dragos **CHECKED BY** Charles Goodwin

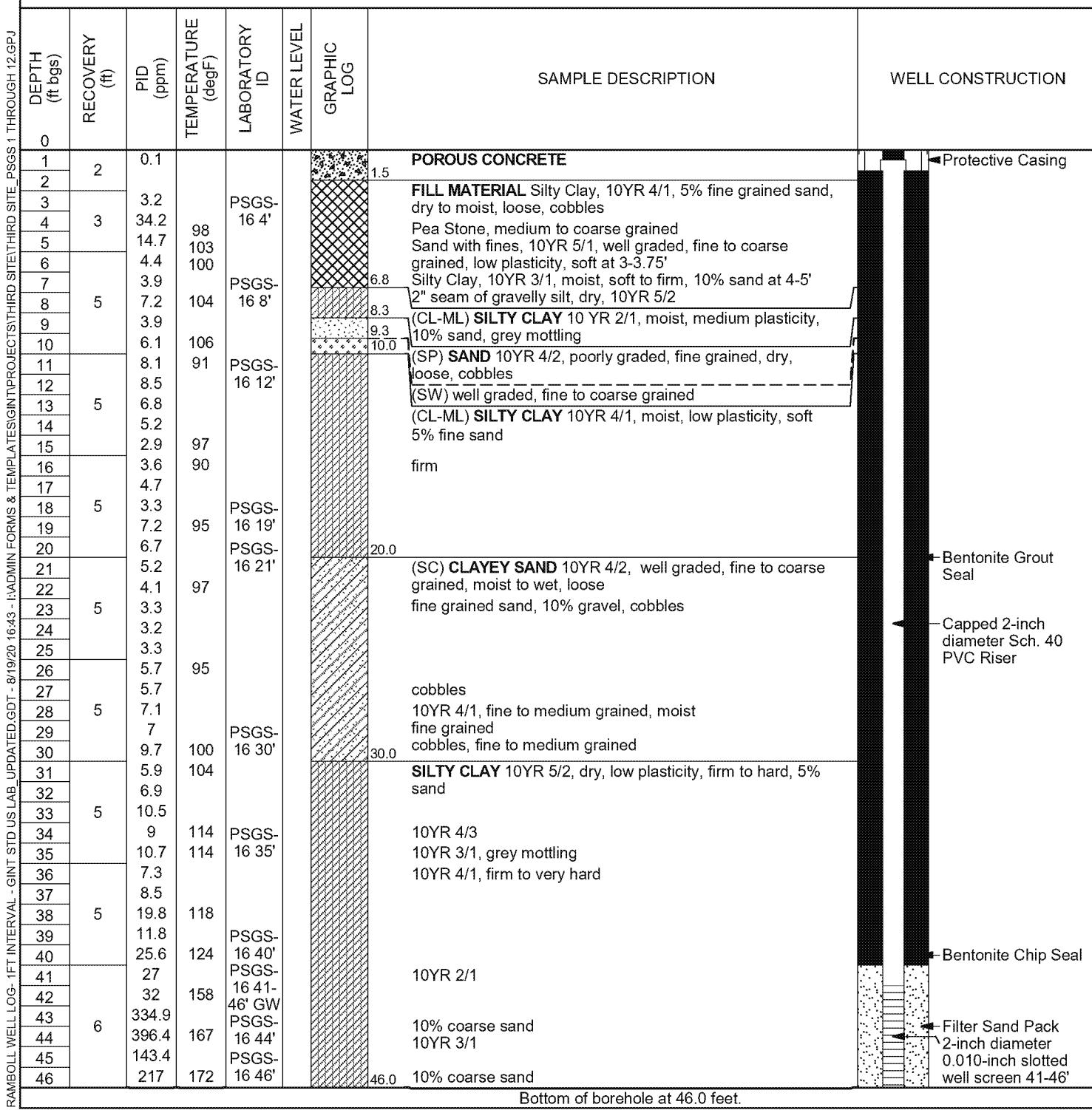
**GROUND ELEVATION** 878.52 ft **TOC ELEVATION** 878.35 ft

**NORTHING** 1741427.4 **EASTING** 3178477.5

**TOTAL BORING DEPTH** 46 ft bgs **BOREHOLE SIZE** 8 in

**TOTAL WELL DEPTH** 46 ft bgs **SCREEN INTERVAL** 41-46 ft

**GROUNDWATER LEVEL** 13.62' below TOC on 8/14/2020





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BORING NUMBER: **PSGS-17**

PAGE 1 OF 1

**CLIENT** Third Site Trustees

**PROJECT NUMBER** 1690016317

**DATE STARTED** 8/12/20 **COMPLETED** 8/12/20

**DRILLING CONTRACTOR** Stock Drilling

**DRILLER** Ryan Brown

**DRILLING EQUIPMENT** Terrasonic

**DRILLING METHOD** Rotosonic (mini)

**PROJECT NAME** Third Site

**PROJECT LOCATION** Zionsville, IN

**LOGGED BY** Amanda Dragos **CHECKED BY** Charles Goodwin

**GROUND ELEVATION** 878.49 ft

**NORTHING** 1741442.9 **EASTING** 3178487.3

**TOTAL BORING DEPTH** 46 ft bgs **SIZE** 8 in.

**SAMPLING METHOD** Core Barrel

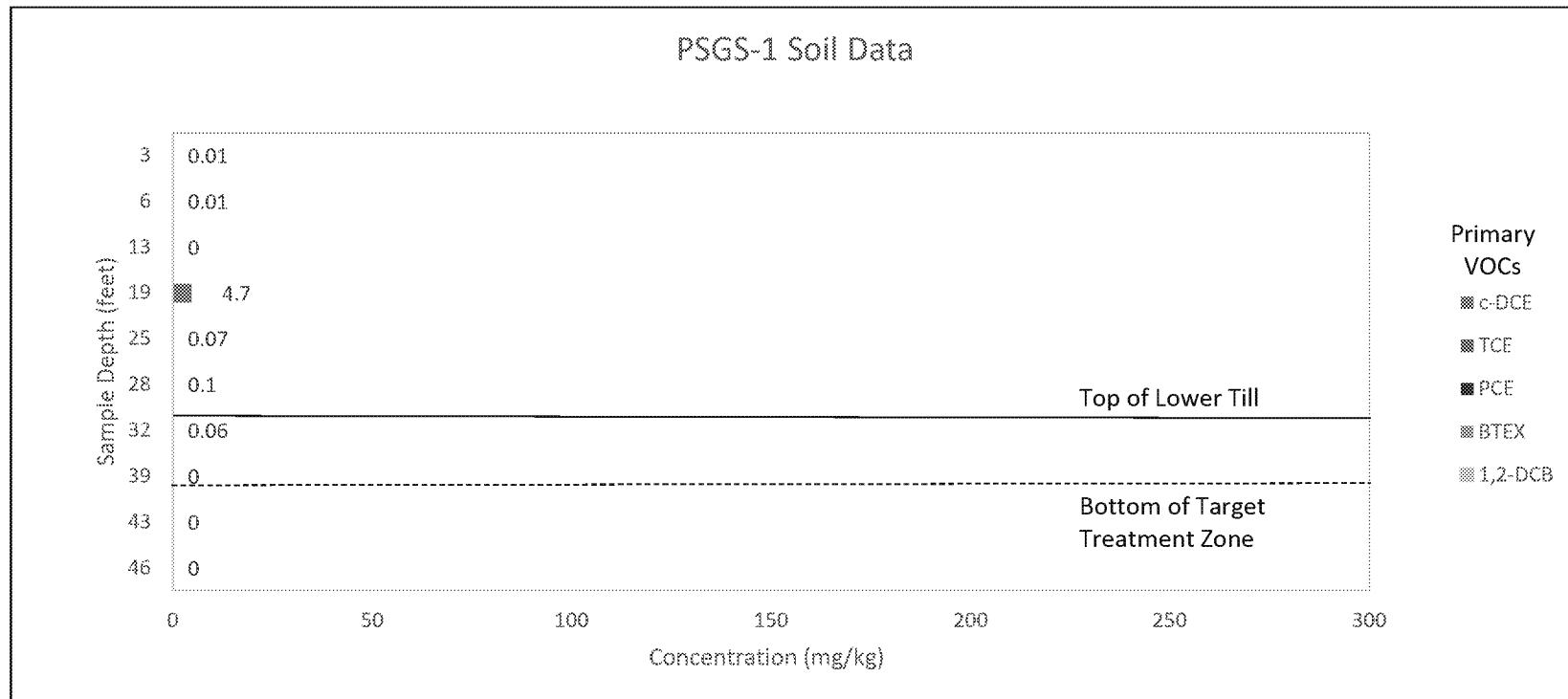
DEPTH (ft/bgs)	RECOVERY (ft)	PID (ppm)	TEMPERATURE (degF)	LABORATORY ID	GRAPHIC LOG	SAMPLE DESCRIPTION	
						TEST NUMBER	DESCRIPTION
0							
1	2.0	1.3				1.5	POROUS CONCRETE
2		1.1					
3		0.7					
4	3.0	4.1		113	PSGS-17 4'		(CL-ML) SILTY CLAY with SAND 10YR 3/2, fine grained sand, dry to moist, non plastic, loose to soft, with cobbles, oxidation at 4'
5		8.1					10YR 4/1, dry, low plasticity, firm, 10% sand
6		5.6					
7		16.3		120	PSGS-17 7'		
8	5.0	22.4					
9		22.2					
10		4	112			9.3	
11		5.3	75			10.0	(SW) SAND 10YR 5/1 well graded, fine to coarse grained, dry, loose
12	5.0	3.1		PSGS-17 13'		12.0	(SC) CLAYEY SAND 10YR 3/1, well graded, fine to coarse grained, moist to wet, loose, cobbles
13		14.3	86				10YR 4/1
14		15.5					(CL-ML) SILTY CLAY 10YR 4/1, dry to moist, low plasticity, soft to firm, 5% sand
15		2.7	89				
16		2.6		PSGS-17 17'			
17	5.0	5.1	84				
18		6				18.0	
19	5.0	4				19.0	(SC) CLAYEY SAND 10YR 4/1, poorly graded, fine grained, moist, loose
20		4.2	86				(SW) SAND 10YR 4/1, well graded, fine to medium grained, moist, loose, 5% gravel
21		4		PSGS-17 22'			15% clay/fines
22	5.0	2.5	80				
23		3.1					
24		2.8	81				
25		0.9					
26		1.6					
27	5.0	2.7	82				
28		2.3					
29		4		PSGS-17 30'			
30	5.0	6.7	82			30.0	
31		7.8					
32	5.0	9.5	PSGS-17 32'				
33		12.1					
34		6.1					
35		4.3					
36	5.0	4.1	96				
37		6.5					
38		6	99				
39	5.0	3.7		PSGS-17 40'			
40		10.8	104				
41		32.4					
42	6.0	6.7	PSGS-17 42'			40.0	
43		7.5					
44		6.6					
45		3.7	110				
46		6.8		PSGS-17 46'			
		6					
		116					
							Attempted to collect groundwater sample, insufficient water present after 3 hours, boring abandoned with bentonite grout seal.
							Bottom of borehole at 46.0 feet.

## APPENDIX B

### Phase 2 Soil and Groundwater Data Plots

# Soil and Groundwater Data Plots

## PSGS Borings

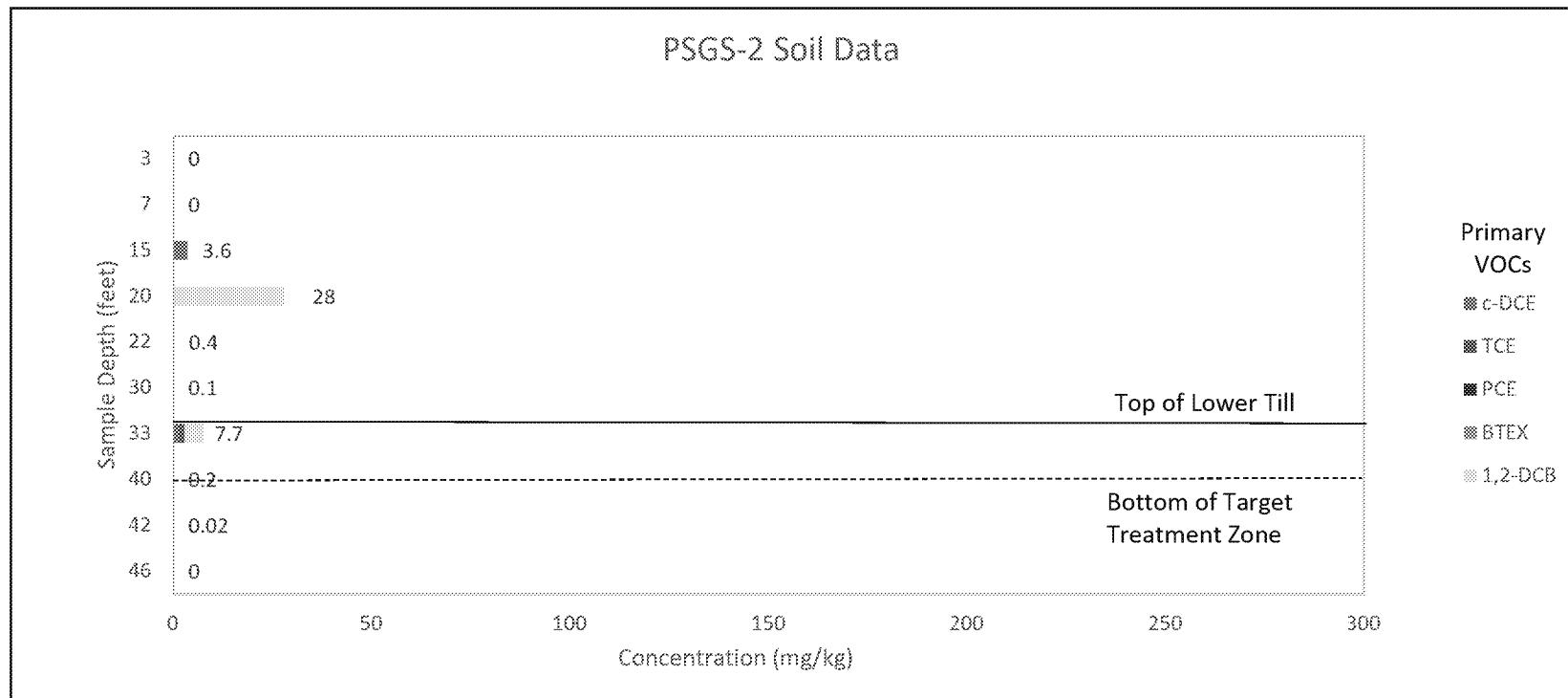


Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.

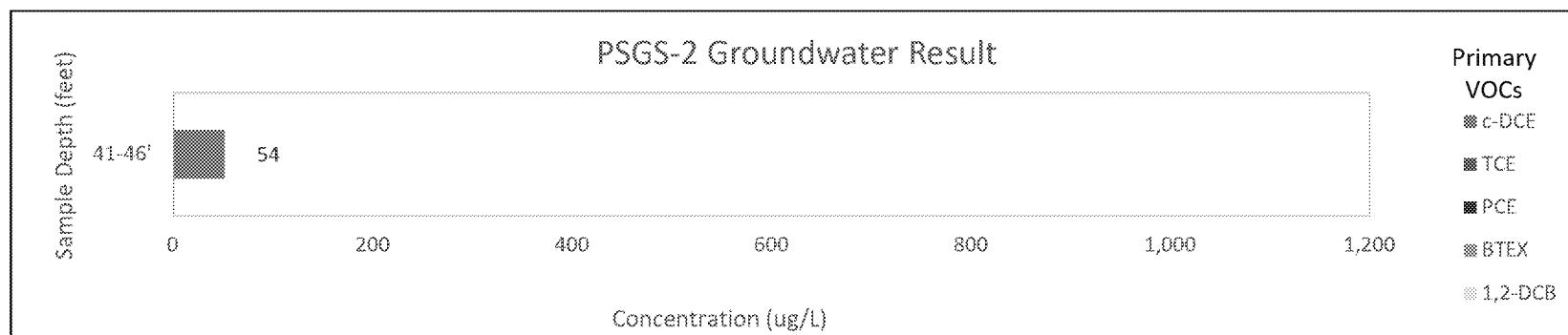
No groundwater available for sample collection after allowing 3 hours for accumulation in borehole.

## Soil and Groundwater Data Plots

### PSGS Borings



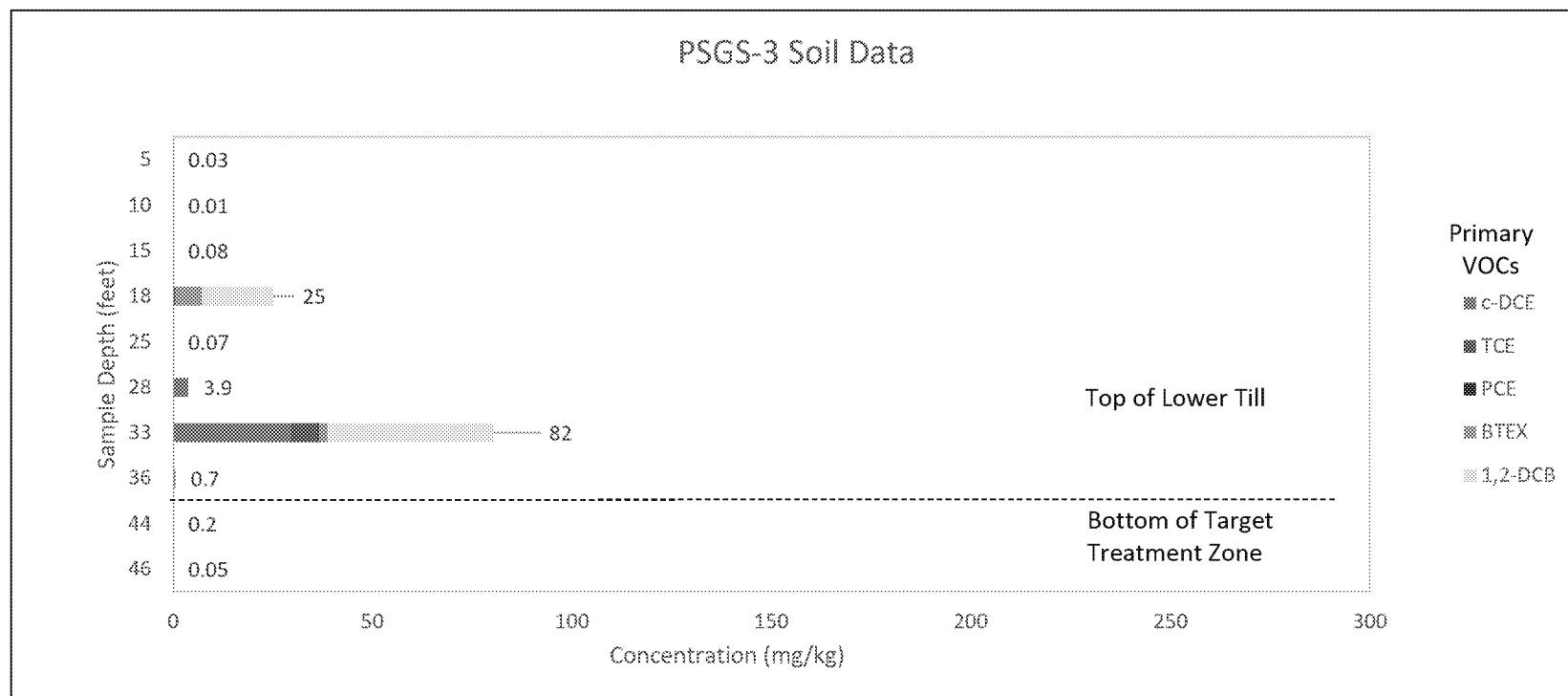
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



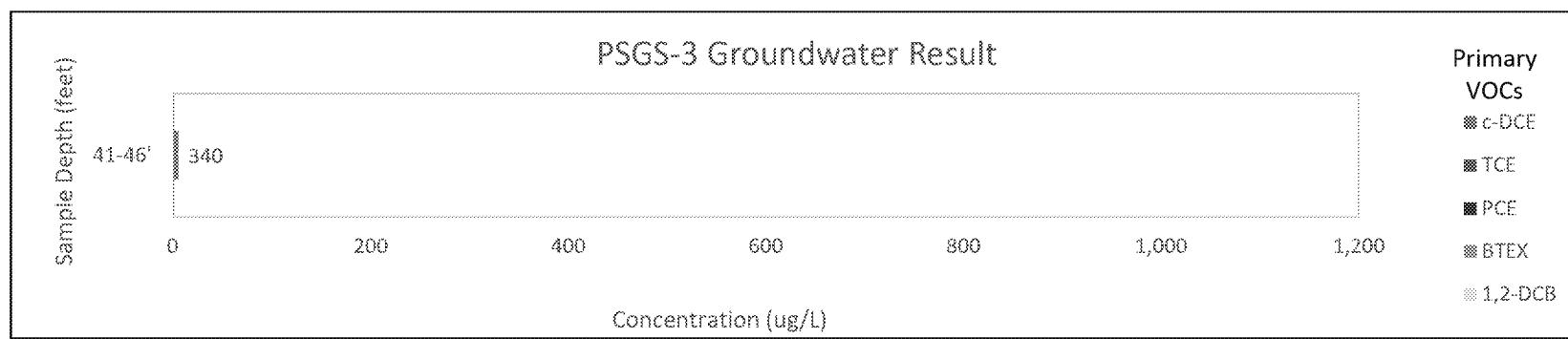
Data labels represent total VOCs (ug/L). A value of 0 corresponds to no VOCs detected.

# Soil and Groundwater Data Plots

## PSGS Borings



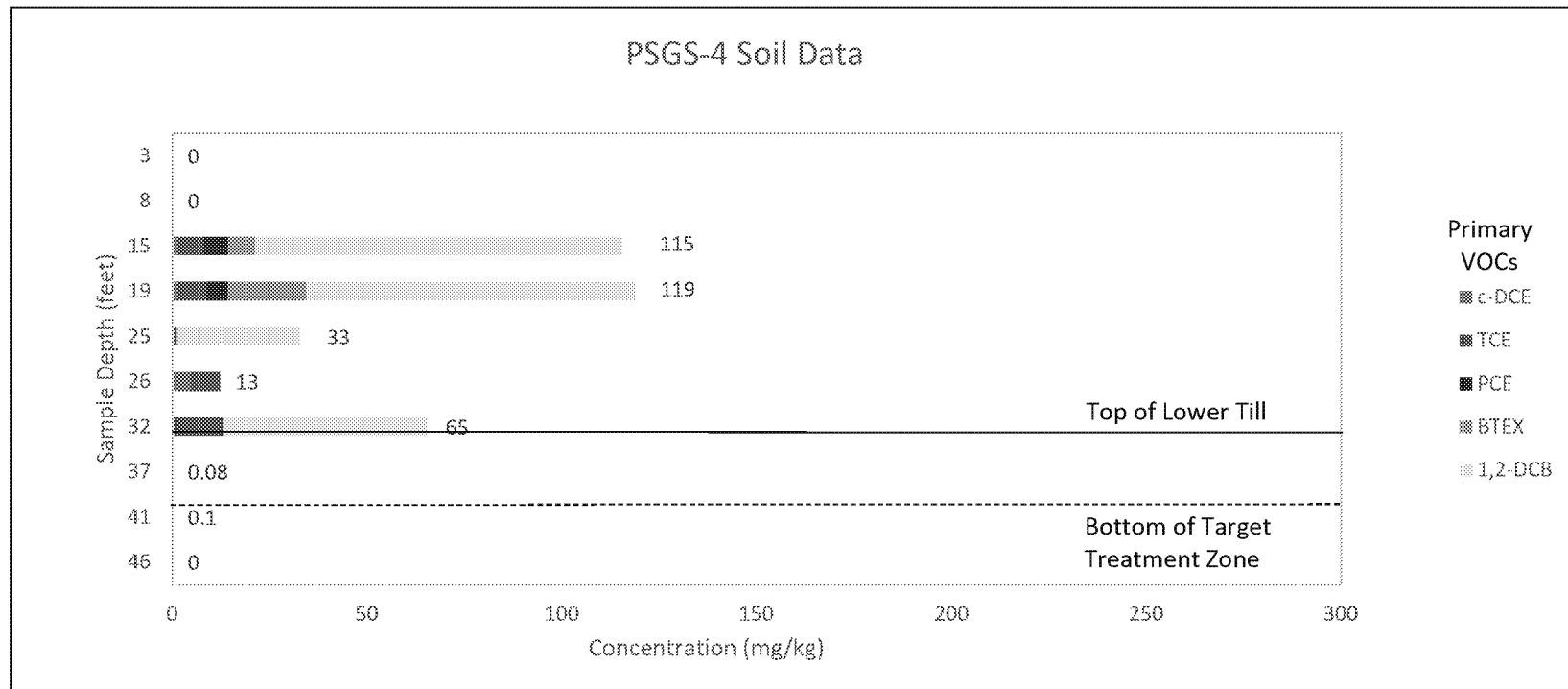
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



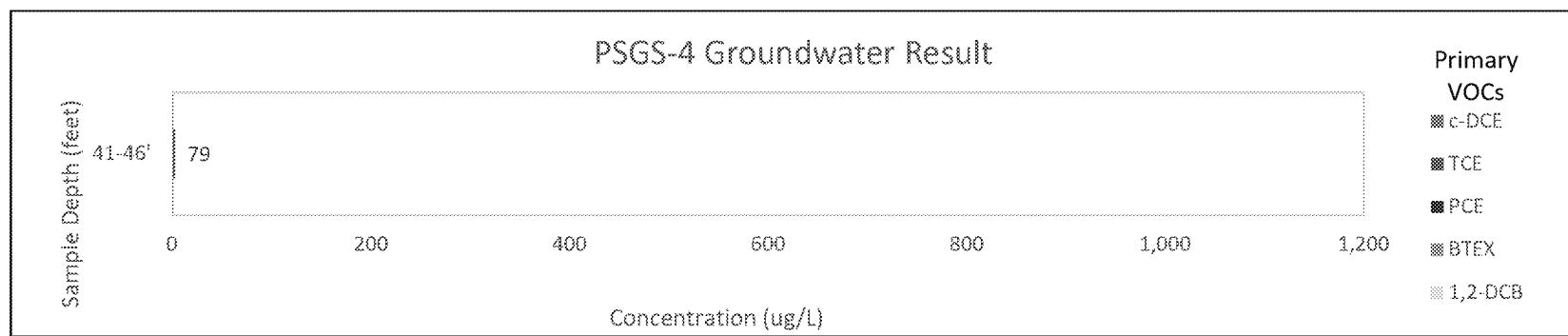
Data labels represent total VOCs (ug/L). A value of 0 corresponds to no VOCs detected.

## Soil and Groundwater Data Plots

### PSGS Borings

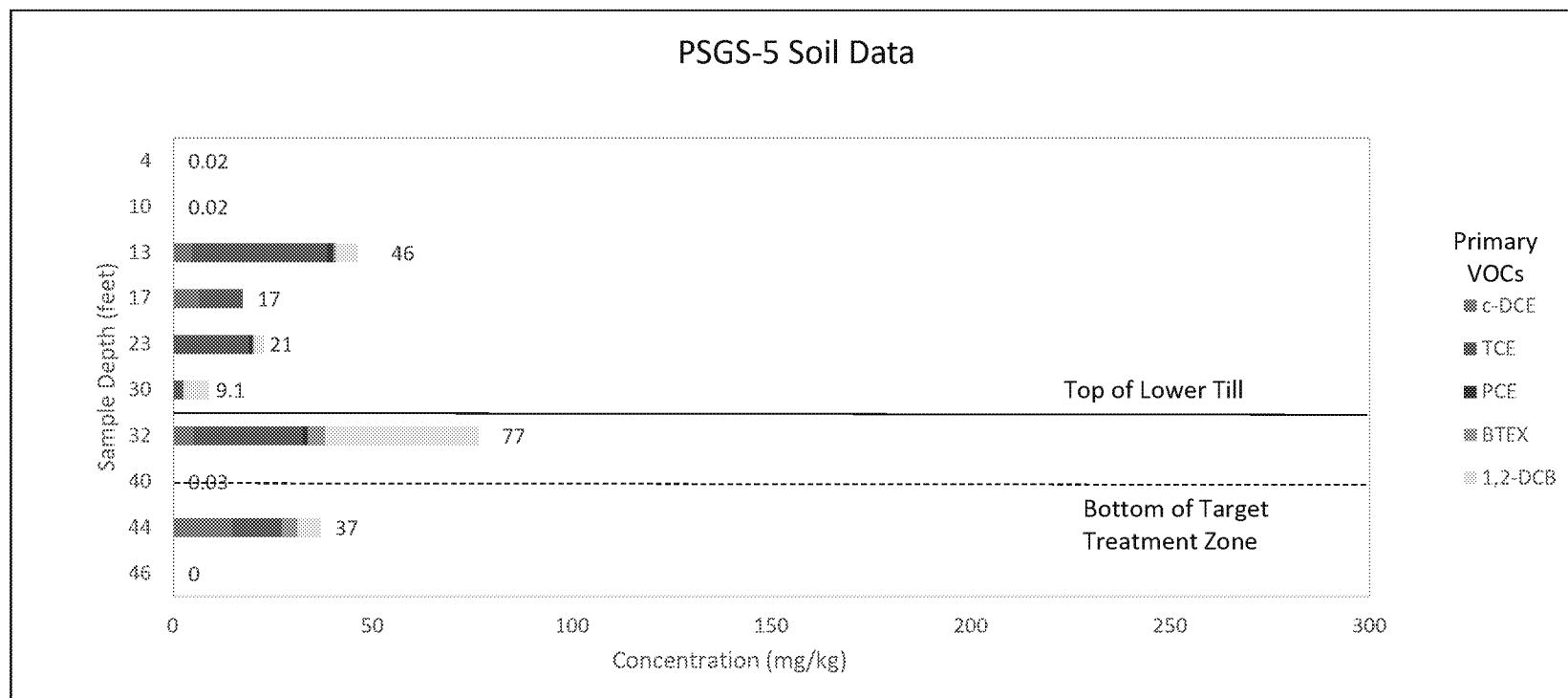


Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.

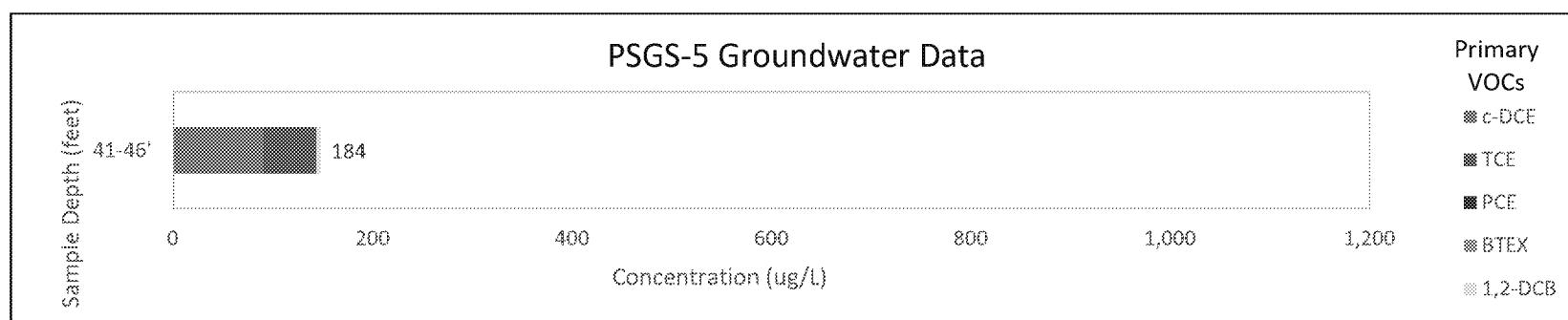


Data labels represent total VOCs (ug/L). A value of 0 corresponds to no VOCs detected.

## Soil and Groundwater Data Plots PSGS Borings

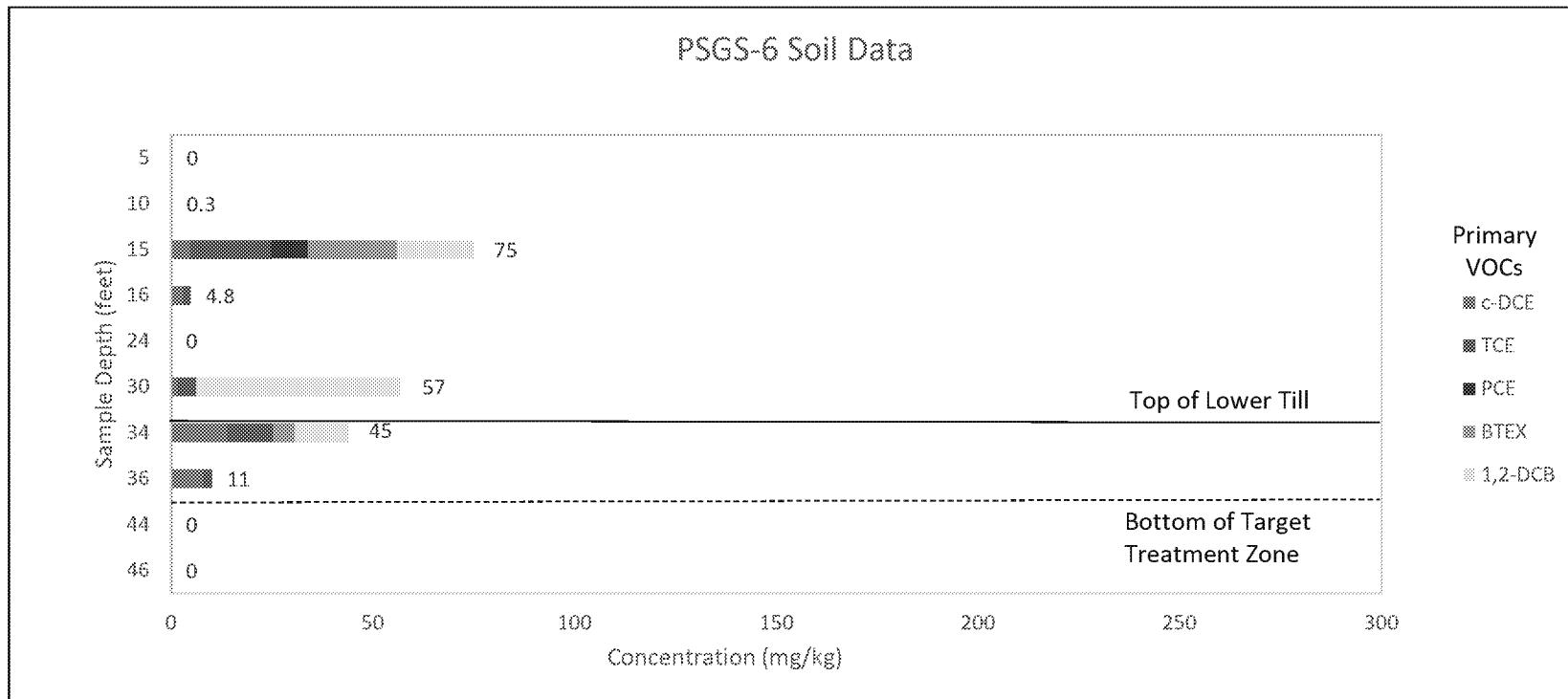


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## Soil and Groundwater Data Plots PSGS Borings

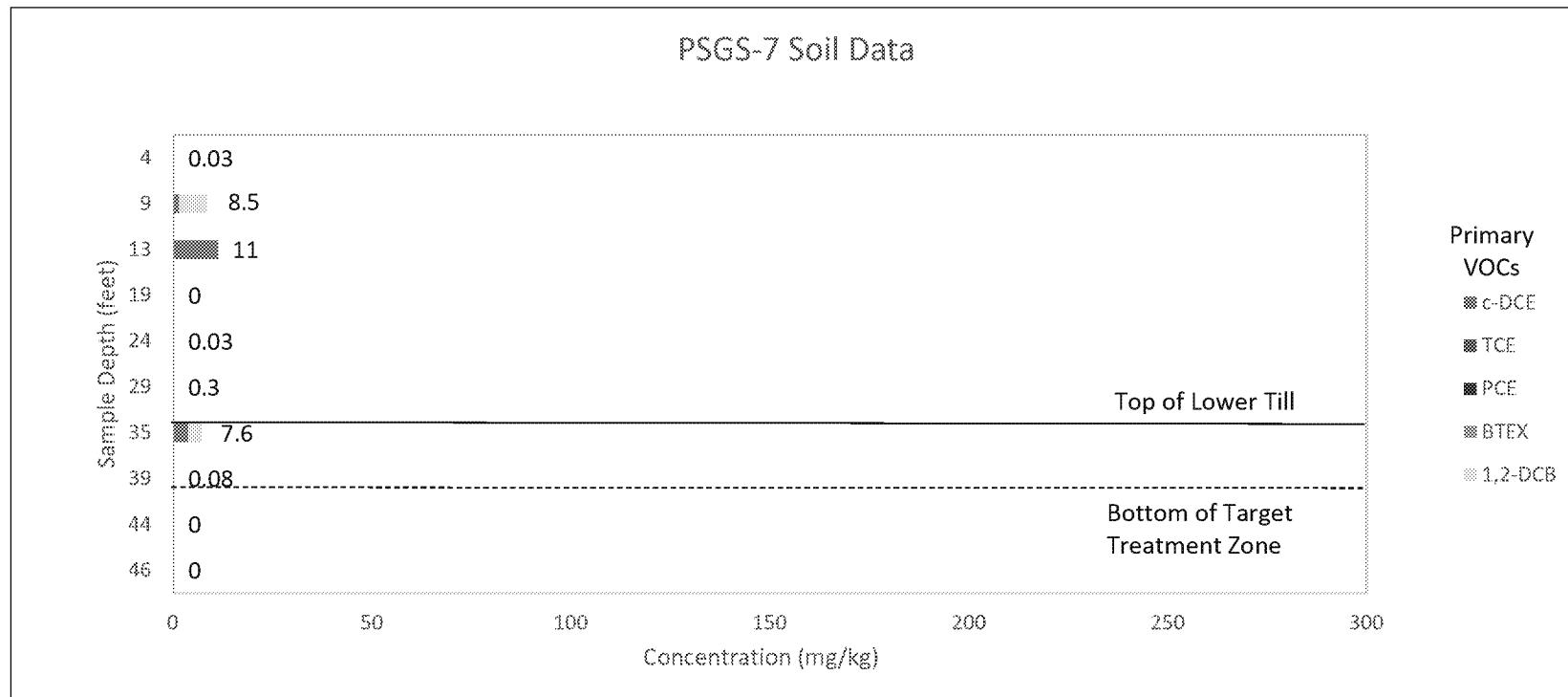


Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.

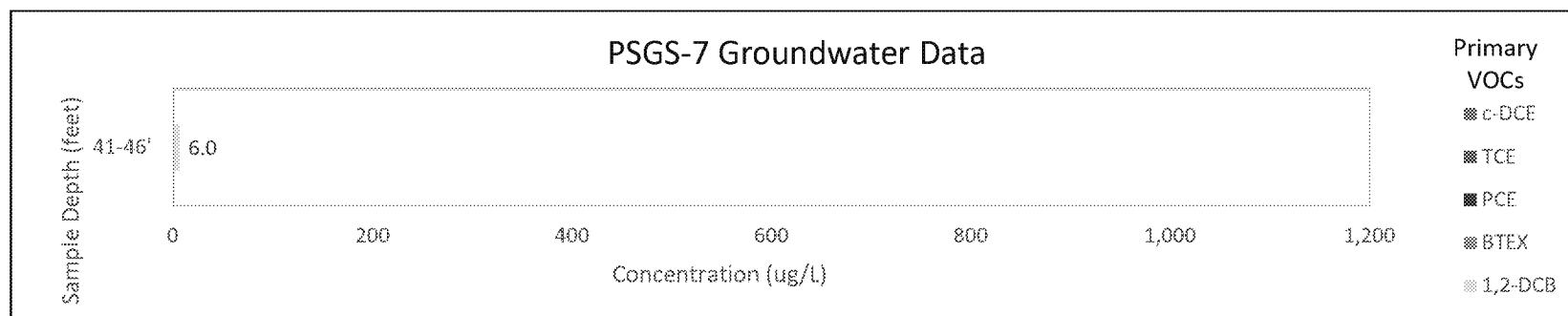
**No groundwater available for sample collection after allowing 3 hours for accumulation in borehole.**

## Soil and Groundwater Data Plots

### PSGS Borings



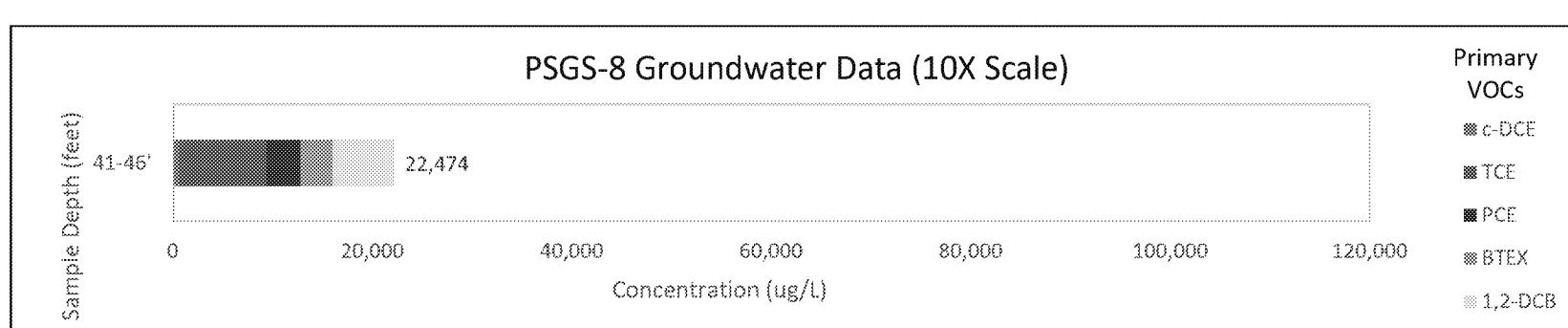
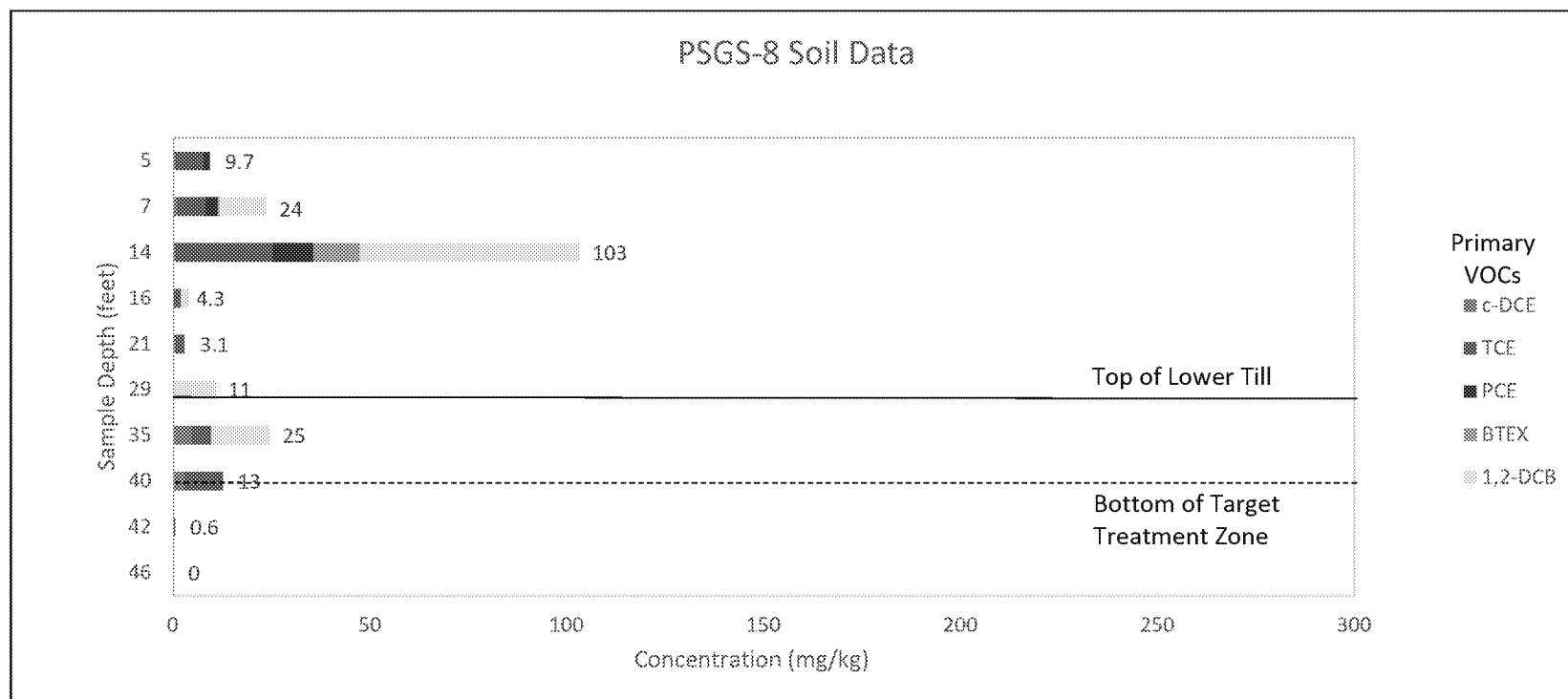
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



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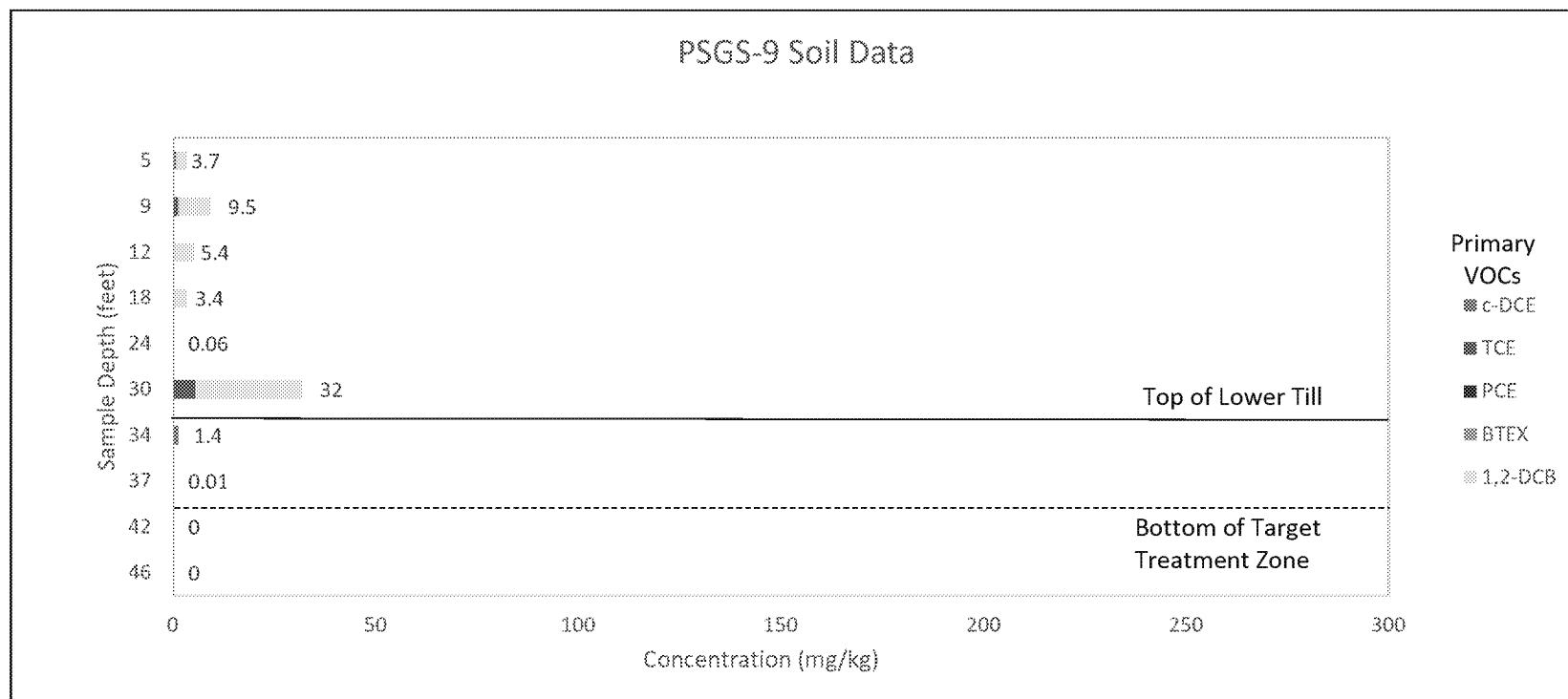
# Soil and Groundwater Data Plots

## PSGS Borings

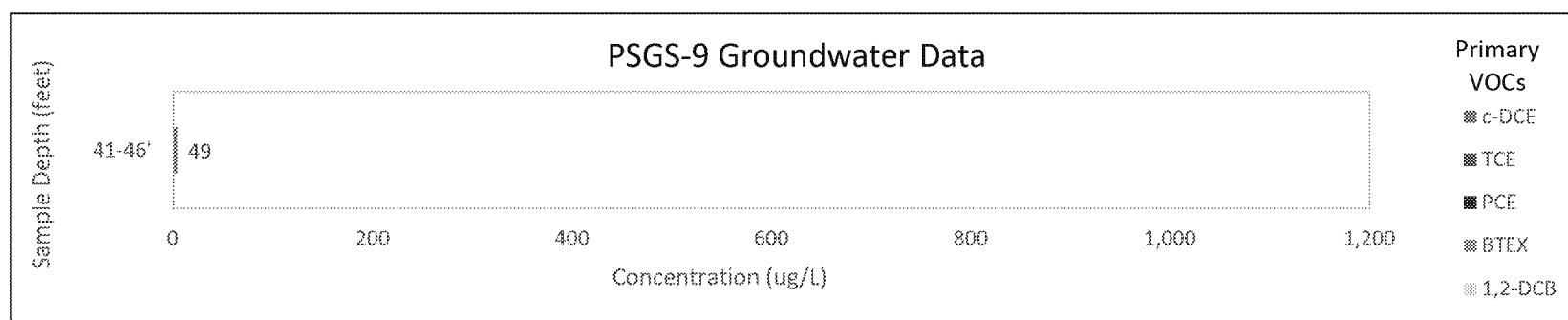


# Soil and Groundwater Data Plots

## PSGS Borings



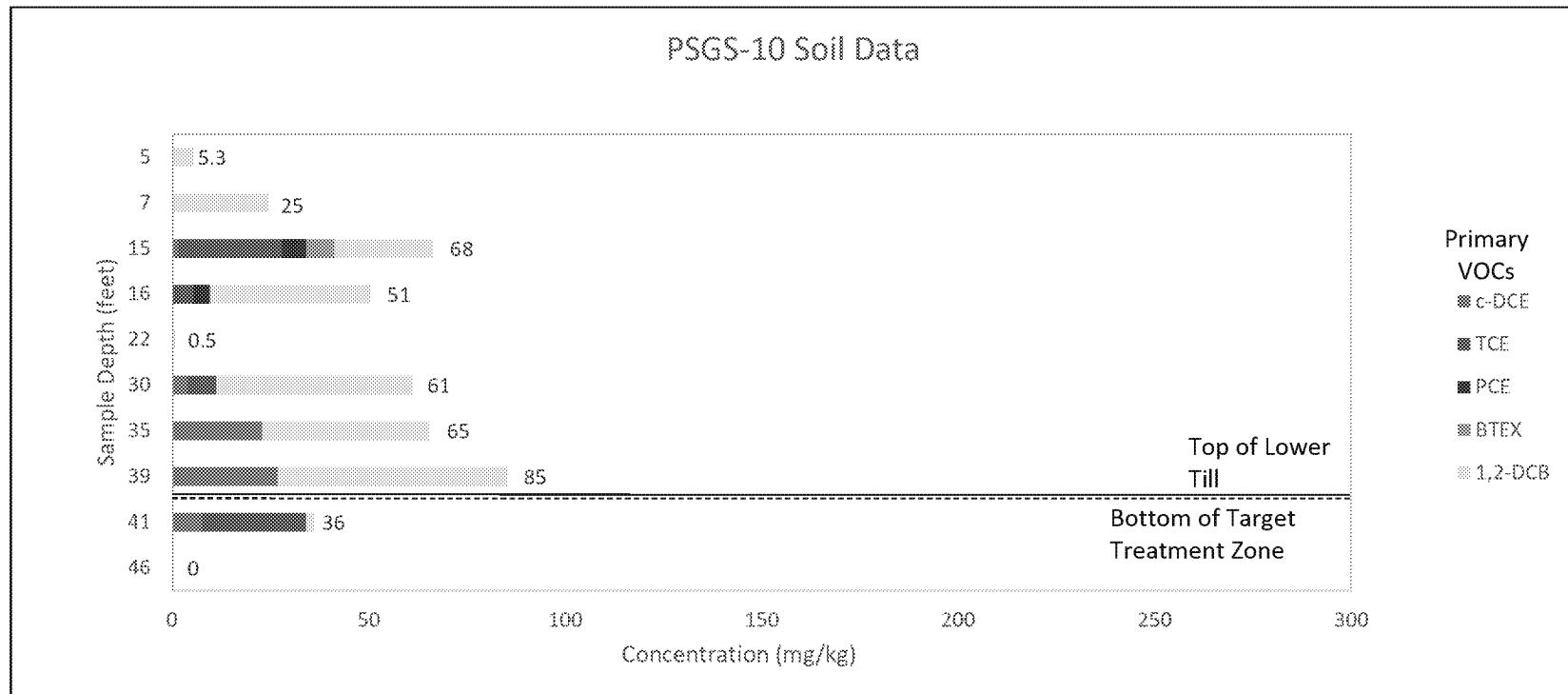
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



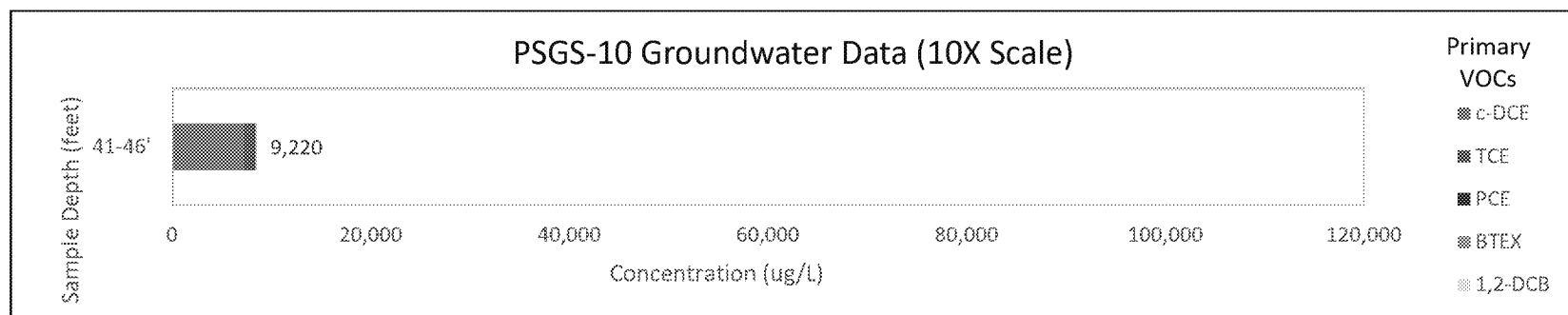
Data labels represent total VOCs (µg/L). A value of 0 corresponds to no VOCs detected.

## Soil and Groundwater Data Plots

### PSGS Borings



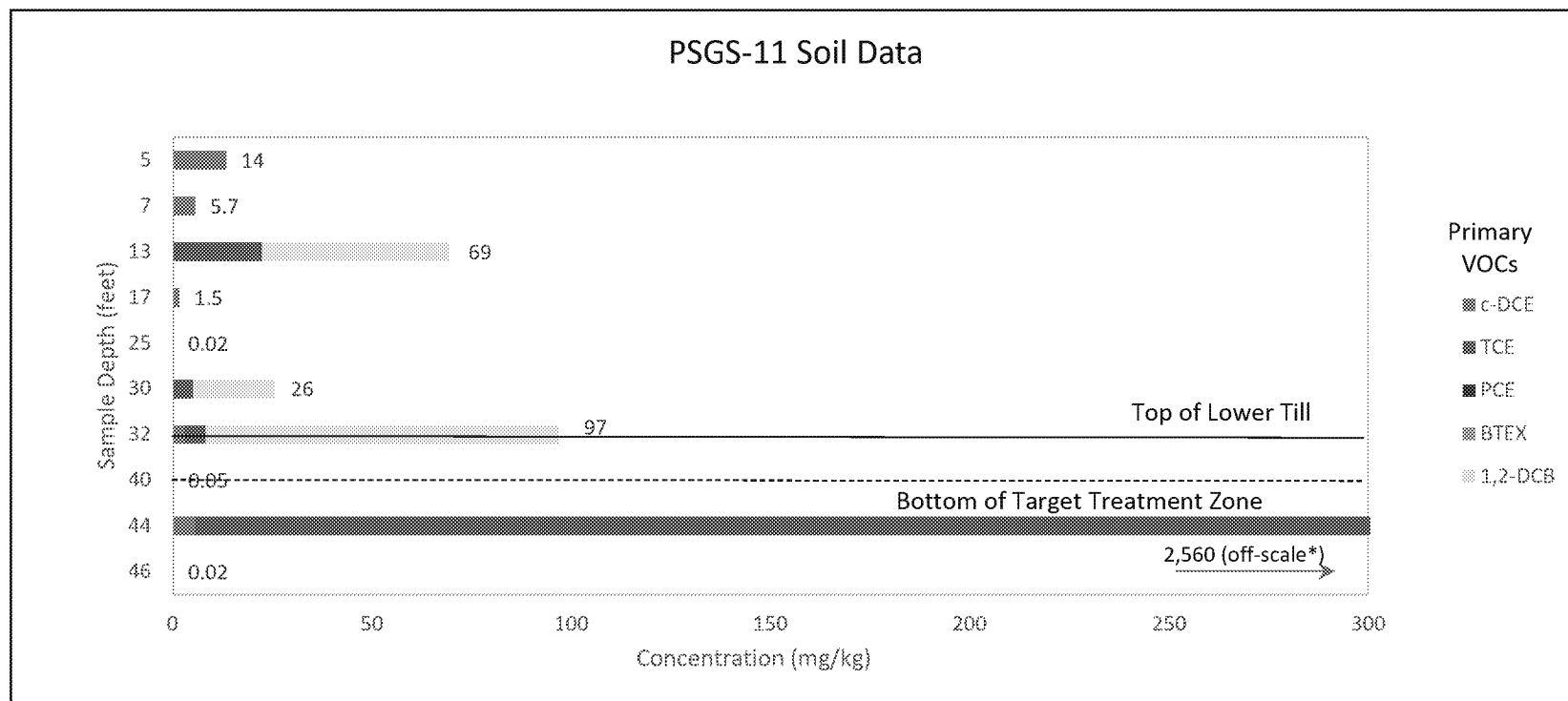
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



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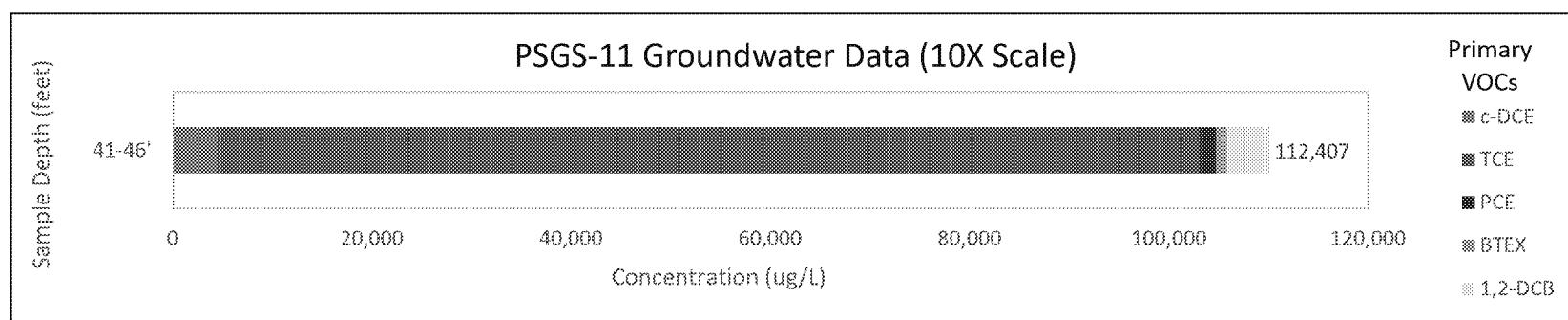
## Soil and Groundwater Data Plots

### PSGS Borings



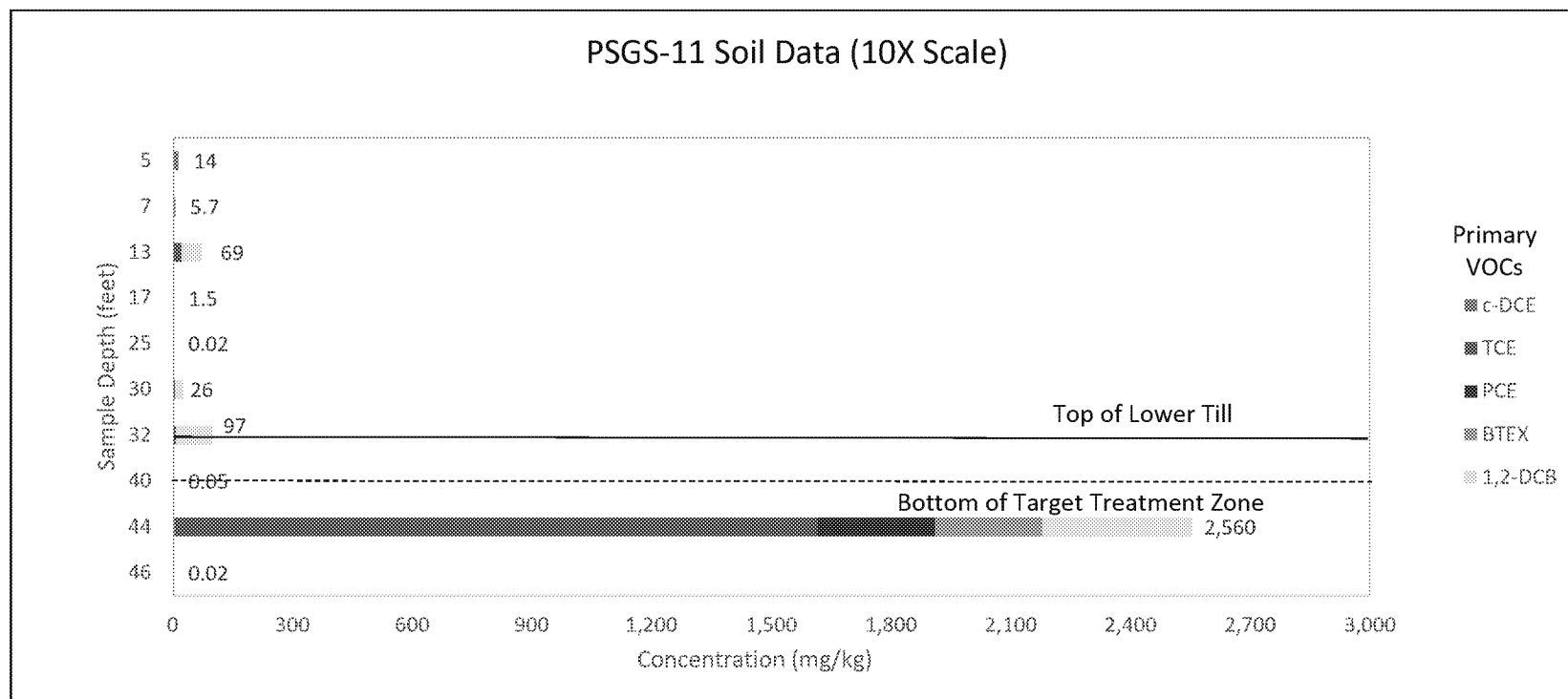
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.

\*Data are plotted on a 10X larger scale on the next plot to capture the higher concentrations observed at 44 ft bgs.

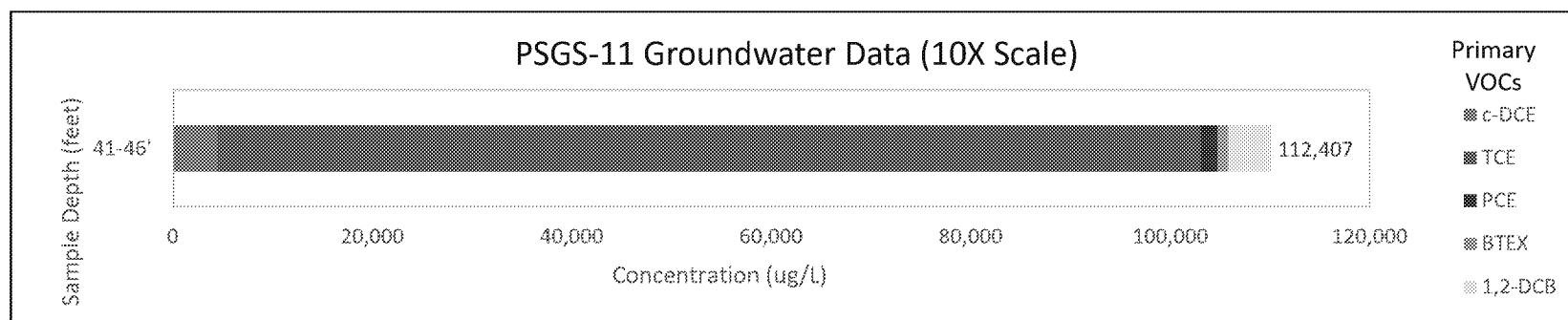


Data labels represent total VOCs (µg/L). A value of 0 corresponds to no VOCs detected.

## Soil and Groundwater Data Plots PSGS Borings



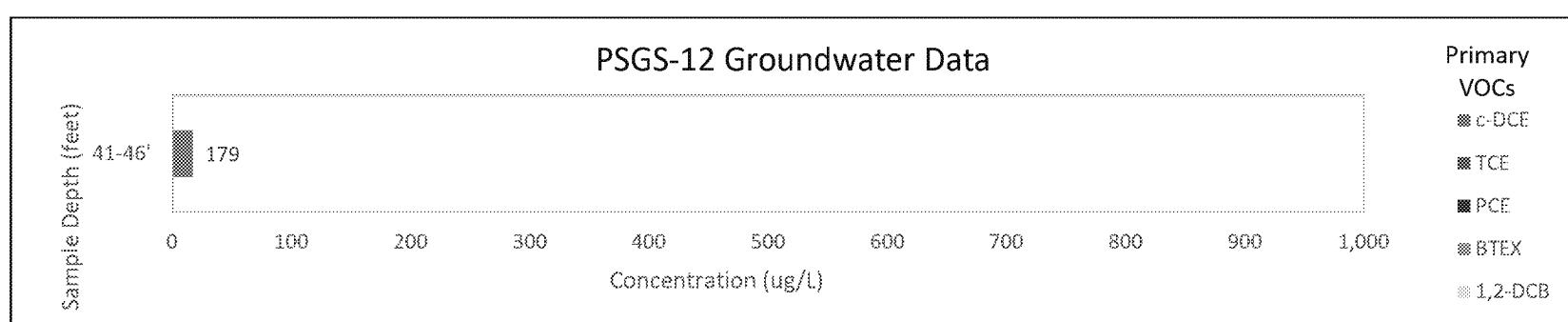
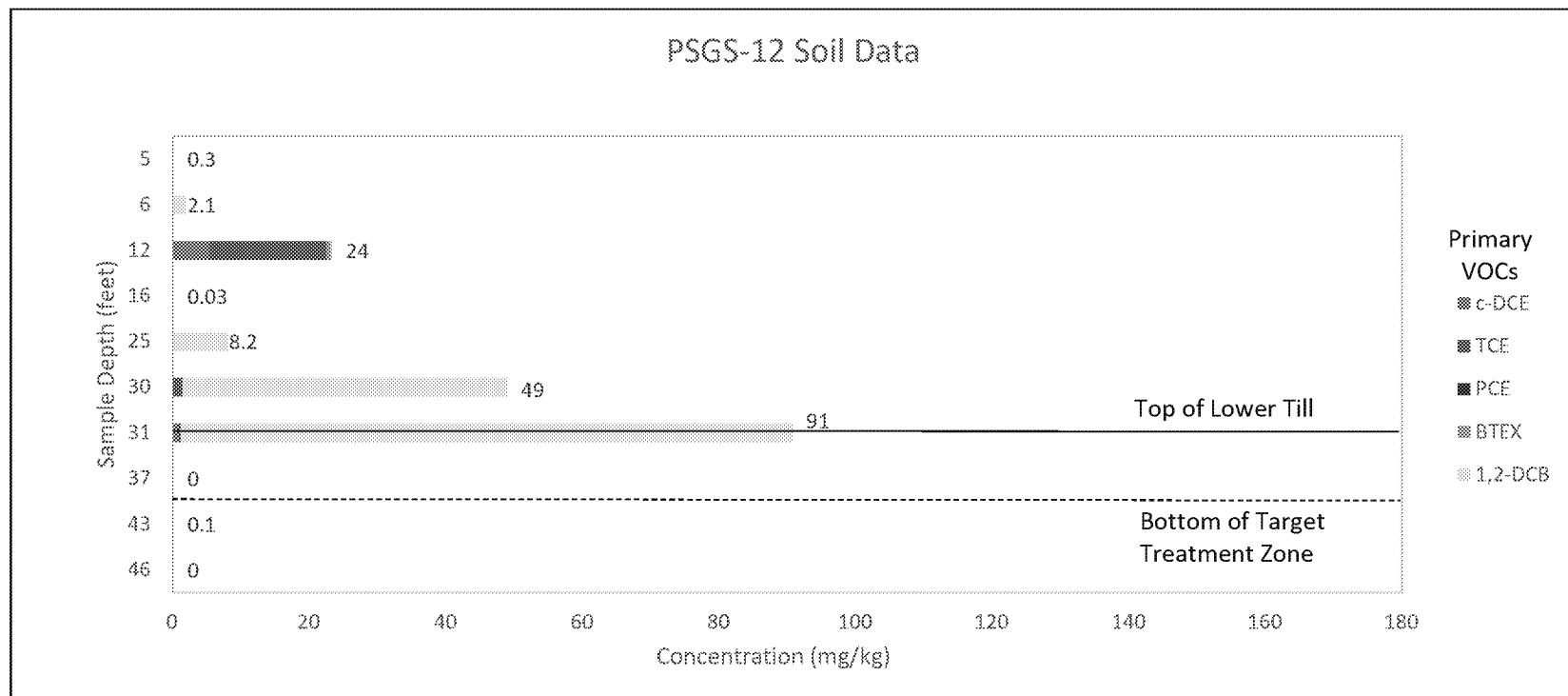
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



Data labels represent total VOCs (µg/L). A value of 0 corresponds to no VOCs detected.

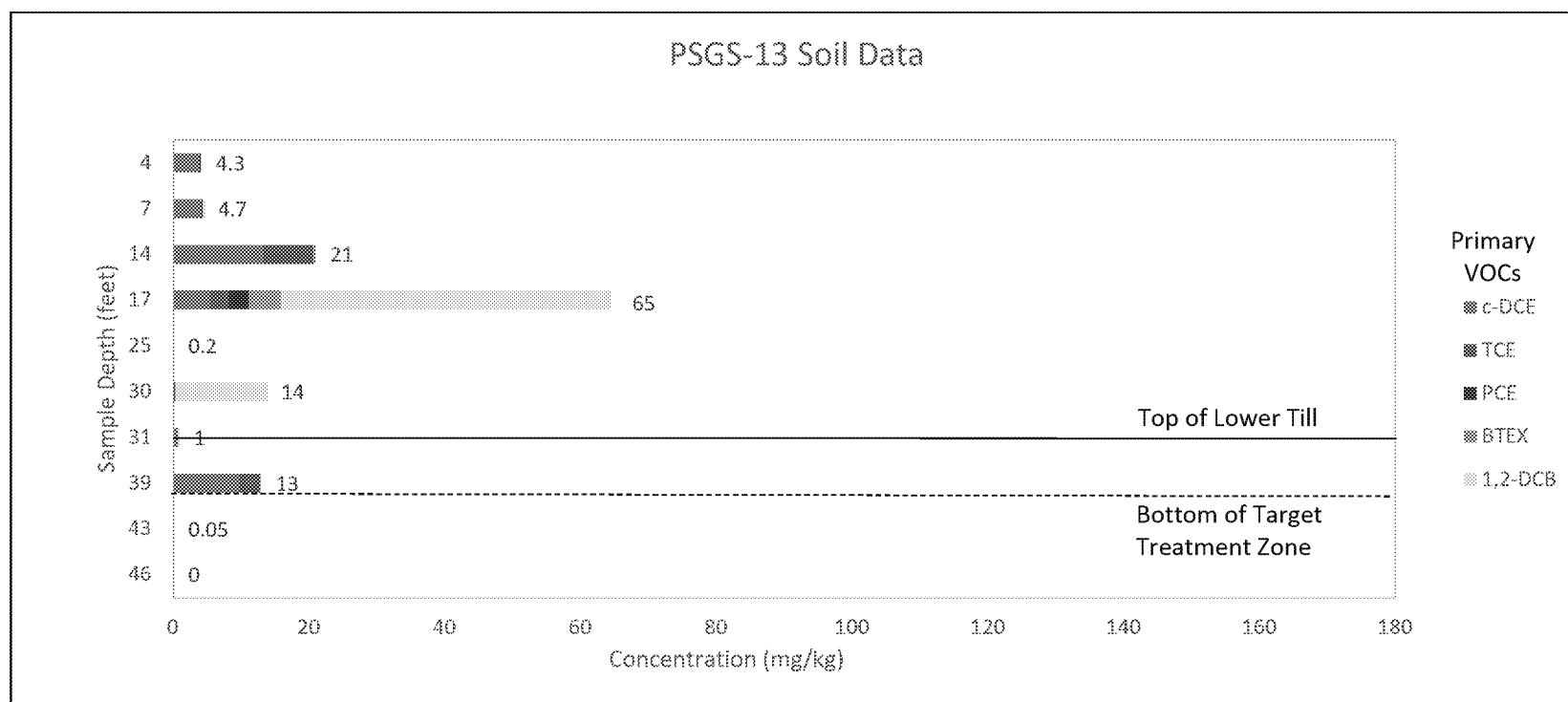
## Soil and Groundwater Data Plots

### PSGS Borings



# Soil and Groundwater Data Plots

## PSGS Borings

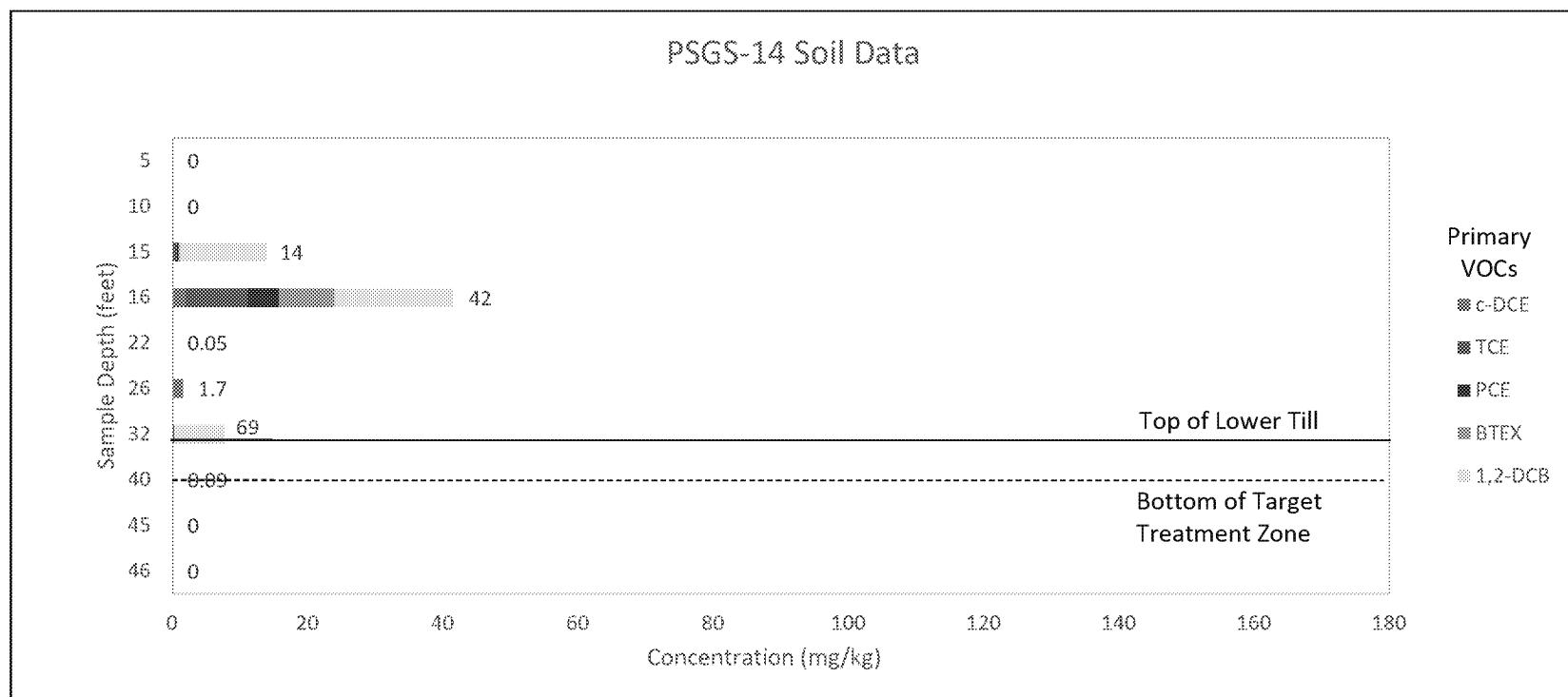


Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.

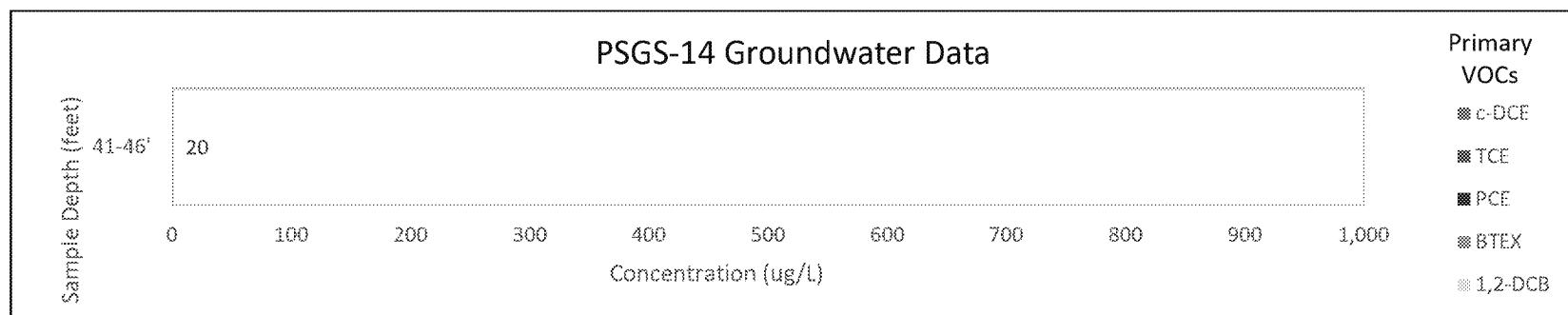
No groundwater available for sample collection after allowing 3 hours for accumulation in borehole.

## Soil and Groundwater Data Plots

### PSGS Borings



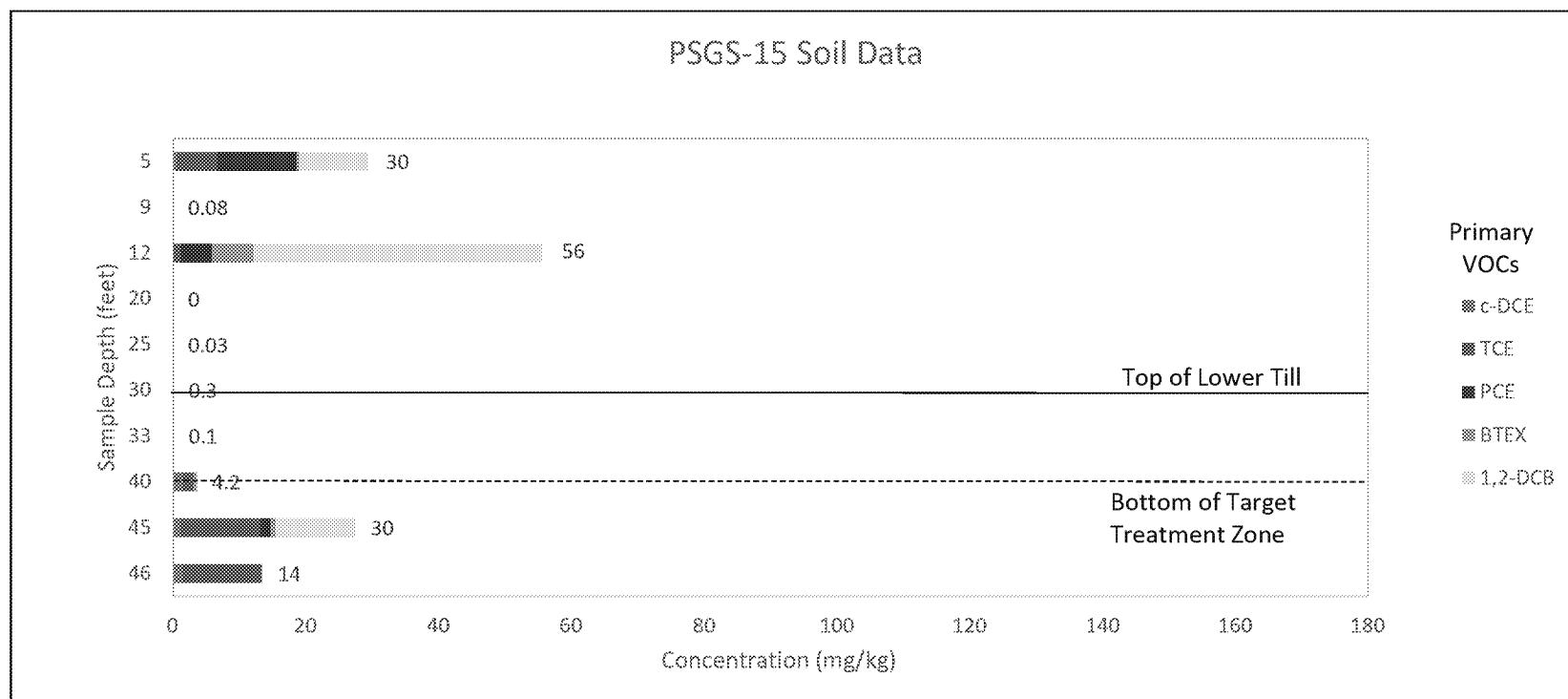
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



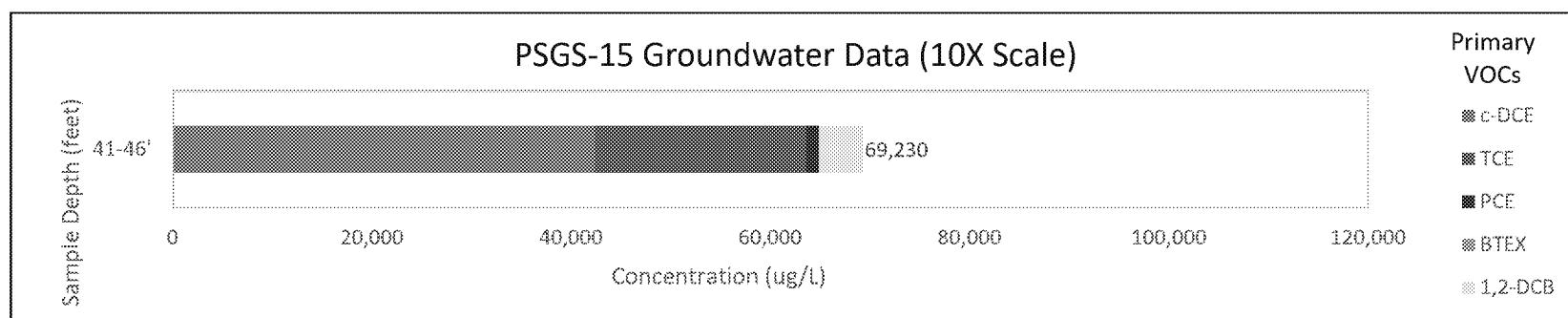
Data labels represent total VOCs (µg/L). A value of 0 corresponds to no VOCs detected.

## Soil and Groundwater Data Plots

### PSGS Borings



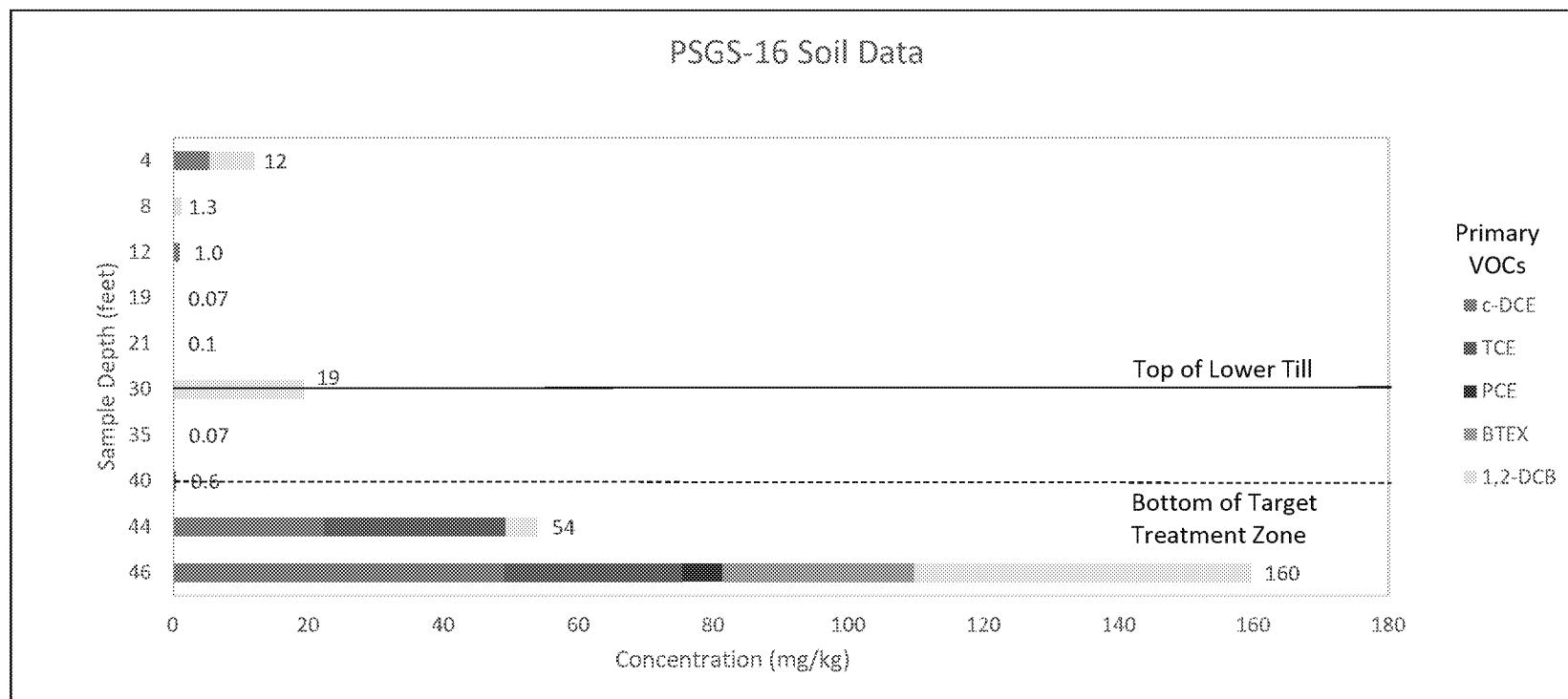
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



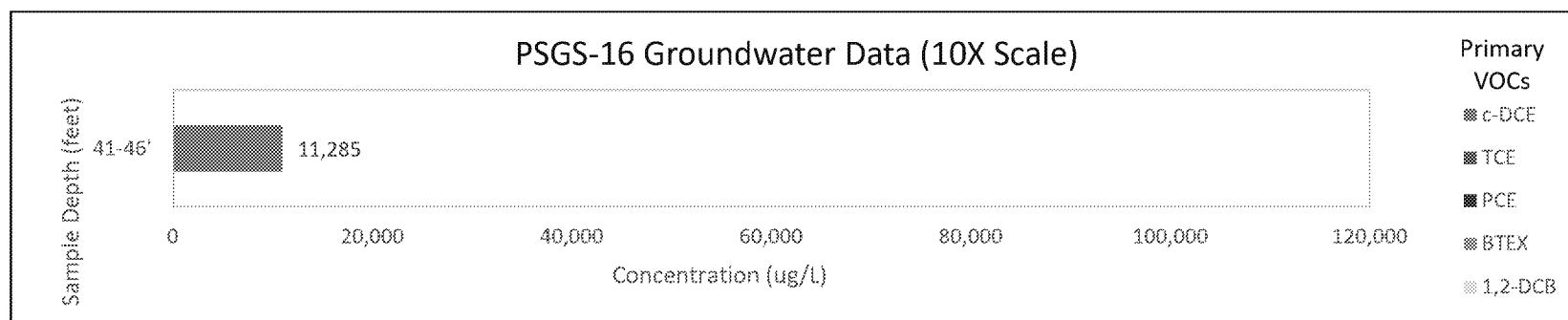
Data labels represent total VOCs (µg/L). A value of 0 corresponds to no VOCs detected.

## Soil and Groundwater Data Plots

### PSGS Borings



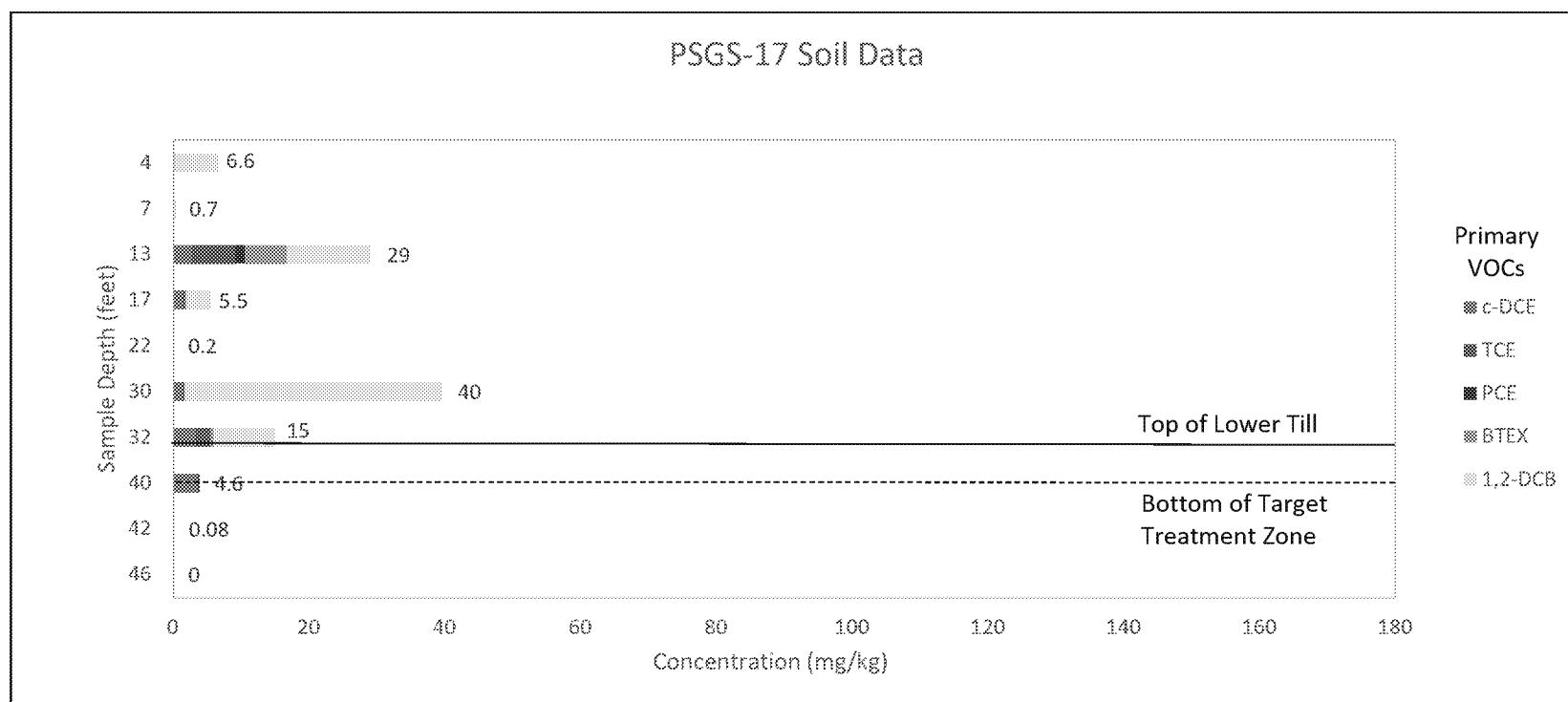
Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.



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# Soil and Groundwater Data Plots

## PSGS Borings



Data labels represent total VOCs (mg/kg). A value of 0 corresponds to no VOCs detected.

No groundwater available for sample collection after allowing 3 hours for accumulation in borehole.

## APPENDIX C

### Laboratory Reports

TR0485D

September 2020